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Digital leadership and employee engagement in hybrid work environments: The role of trust and communication

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Abstract

In response to the increasing shift toward hybrid work arrangements, this study investigates the role of digital leadership in shaping employee engagement, emphasizing the mediating effects of trust in leadership and digital communication. Drawing on the Job Demands–Resources (JD–R) model and Social Exchange Theory, this research adopts a quantitative approach using Partial Least Squares Structural Equation Modeling (PLS–SEM) based on survey data collected from 385 employees working under hybrid systems in diverse organizational settings. The findings reveal that digital leadership has a significant positive direct effect on employee engagement ($\beta = 0.36, p < 0.001$). Furthermore, trust in leadership and digital communication both serve as partial mediators in this relationship, indicating that relational and communicative mechanisms are crucial for sustaining engagement in digitally mediated environments. The structural model explained 51% of the variance in employee engagement, demonstrating strong explanatory power. These results extend current leadership theory by contextualizing digital leadership within hybrid work structures and emphasizing the need for trust-building and high-quality communication. The study contributes to the HRM literature by offering actionable insights for organizations seeking to optimize leadership strategies and communication infrastructures in evolving digital workplaces. Despite limitations related to cross-sectional data and sample generalizability, the research provides a foundation for future longitudinal and cross-cultural investigations into digital leadership dynamics.

Keywords: digital leadership; employee engagement; hybrid work; trust in leadership

1. Introduction

The COVID-19 pandemic accelerated the digital transformation of workplaces, forcing many organizations to adopt hybrid work models that combine remote and in-office arrangements. Hybrid work is now viewed not as a temporary expedient but as a strategic norm for the post-pandemic era [1]. However, this shift has raised new challenges for leadership and employee well-being. Notably, emerging evidence suggests that although hybrid arrangements offer flexibility, employee engagement and well-being have, in some contexts, declined under poorly designed hybrid systems. Engaged employees are characterized by high levels of vigor, dedication, and absorption in their work, and they are critical to innovation, productivity, and organizational resilience [1], [2]. In this digital-first era, effective leadership is essential to maintain engagement across dispersed teams. Digital leadership – broadly defined as the use of technology-enabled strategies to drive organizational change and employee alignment – has come to the fore as a key leadership approach. In fact, digital leadership is specifically conceived as a leadership style that drives digital transformation: it enables organizations to digitize work processes and learning cultures, and is thus vital for competitiveness and survival in the twenty-first century [3]. A digital leader, in this view, is one who generates innovative ideas at the digital level, motivates employees in virtual or digitally mediated environments, sustains ongoing communication through digital channels, and formulates effective digital strategies. These attributes suggest that digital leadership goes beyond mere technological savvy to encompass strategic vision, adaptability, and the ability to inspire and engage employees through technology.

Prior studies have begun to explore the connections between digital leadership, trust, communication, and employee outcomes, but many questions remain. Research shows that transformational and digitally-oriented leadership can positively influence employee engagement and related behaviors. For example, Yang et al. found that digital leadership played a crucial role in fostering employees' engagement and voice behaviors, with higher-

quality digital leadership increasing employees' willingness to speak up through elevated work engagement [4]. Similarly, front-line managers' digital leadership has been shown to empower employees and strengthen affective commitment and engagement during digital transformation [2], [4]. In particular, digital leadership often operates through social exchange processes: leaders' supportive and enabling use of technology can signal care and build psychological resources in employees, which in turn drives engagement. Indeed, effective digital leaders tend to enhance employees' sense of empowerment and inclusion, which facilitates greater intrinsic motivation and dedication to work. Li et al. (2024) note that the proliferation of digital technologies has fundamentally altered work roles and communication, making employee engagement a critical metric of adaptation in the digital era [5]. They further observe that although a positive link between digital leadership and engagement is recognized, there remains a paucity of research on *who* provides this leadership (e.g. senior vs. middle managers) and *how* exactly it translates to engagement.

In the broader leadership literature, trust and communication have long been identified as key mechanisms influencing engagement in virtual and hybrid contexts. Organizational trust – the employees' belief that management is reliable and has employees' best interests at heart – is especially salient in dispersed work environments where face-to-face cues are limited. Survey studies find that high levels of perceived organizational support, trust, and respect strongly boost work engagement. For instance, Wahyutomo et al. report that organizations successfully implementing hybrid models tend to have higher employee engagement and performance, and that “organizational support, trust, and respect for employees contribute significantly to work engagement and performance.” In their quantitative study, strong organizational support (closely tied to trust) increased employee engagement, which in turn led to better individual performance [6]. These findings underline that in hybrid settings, trust acts as a foundation for engagement: when employees feel trusted and supported by their leaders, they invest more effort and enthusiasm in their work.

Digital communication skills also play a pivotal role in this dynamic. Remote and hybrid leaders must convey presence and support through mediated channels, making their proficiency with digital tools a critical competency. Recent empirical work indicates that supervisors' adept use of digital communication technologies can amplify the impact of leadership on engagement. For example, Boccoli et al. demonstrate that supervisors' perceived digital communication skills significantly moderate the effect of leader support on remote employees' engagement [7]. In practice, this means that leaders who skillfully use video conferencing, messaging platforms, and other tools can better convey psychological presence and inclusion, thereby strengthening their team's commitment and energy. These authors emphasize that developing managers' digital communication capabilities is essential for sustaining engagement in remote work settings. More broadly, scholars of hybrid work design argue that leadership development programs must integrate communication and collaboration mechanisms: hybrid workplaces should be designed so that managers can maintain clear, consistent messaging and responsiveness across both in-person and virtual teams [1]. When communication is transparent and frequent, it helps nurture the cross-cultural understanding and psychological safety needed for trust to flourish among hybrid teams.

Despite these insights, significant gaps remain in the literature. First, much of the existing research treats leadership and engagement in either fully on-site or fully remote contexts, whereas hybrid arrangements present unique complexities. The literature on *digital leadership in hybrid contexts* is still emerging, with few studies specifically modeling how leaders using technology influence engagement across mixed physical/virtual teams. Second, although the importance of trust and communication is acknowledged, few studies have empirically tested their mediating roles in the digital leadership–engagement relationship. Prior work highlights the moderation role of digital communication in remote work [7], and others underscore the direct link between organizational trust and engagement [6], but integration of these constructs into a unified model is lacking. In particular, it remains underexplored how *digital leadership behaviors* shape employees' trust in leadership and use of digital communication channels, and how those in turn drive engagement in hybrid teams.

Furthermore, most studies on employee engagement in flexible work have been qualitative or cross-sectional, with a dearth of large-sample, quantitative investigations using structural modeling. This gap is notable given calls for more rigorous testing of theory in this domain. We find no PLS-SEM studies that jointly examine digital leadership, trust, digital communication, and engagement in hybrid settings. Addressing this gap, the present study uses survey data from employees in hybrid work arrangements and applies PLS-SEM to assess hypothesized relationships. This allows us to quantify the direct effect of digital leadership on engagement as well as the indirect paths through trust and communication. In doing so, the research makes a novel contribution by integrating technological and human dimensions: it simultaneously considers how leaders' digital practices translate into psychological trust and connective communication, and ultimately into employee engagement.

Understanding these relationships is both timely and urgent. Hybrid work is rapidly becoming the default model for many industries worldwide, making it imperative to update leadership theory and practice accordingly. For scholars, this means extending classic engagement theories to account for digital media and dispersed teams. Theoretically, the study responds to recent calls to explore digital leadership beyond top executives and to examine contextual moderators like communication medium [1], [2]. It also addresses the need to articulate how trust is built and communicated in technology-mediated environments, filling a notable gap in organizational behavior research.

Practically, leaders and HR professionals need evidence-based guidance on maintaining engagement when teams are not co-located. As Nagori and Lawton note, organizations are still experimenting with hybrid designs, and actionable prescriptions for leadership development and communication strategy are scarce. The COVID-era experience has shown that neglecting trust and clear communication in hybrid teams can quickly erode morale and productivity. By empirically identifying the roles of trust and digital communication, this study provides targeted insights that managers can apply immediately. In particular, it highlights the urgency of training leaders in digital communication fluency and trust-building behaviors (such as transparent decision-sharing and consistent messaging) to sustain high engagement.

Building on the above, this study formulates the following research questions. RQ1: How does digital leadership influence employee engagement in hybrid work environments? RQ2: To what extent do employees' trust in leadership and the quality of digital communication mediate or moderate this relationship? RQ3: What are the relative contributions of trust and digital communication in explaining engagement under digital leadership? By answering these questions, the study aims to reveal the pathways through which leaders' digital practices translate into engaged hybrid teams.

This research makes several contributions. Theoretically, it integrates disparate streams of literature – digital leadership, trust, communication, and engagement – into a unified model tested with PLS-SEM. It extends existing leadership theory by explicitly linking technology-enabled leadership behaviors to psychological constructs (trust) and communication processes, thus offering a more holistic view of leadership in the digital era. By quantifying these links, the study advances understanding of *how* and *why* digital leadership fosters engagement. It also contributes to engagement theory by identifying digital communication and trust as key antecedents in hybrid contexts, potentially generalizing beyond the study sample.

The findings will guide managers on where to focus their efforts in hybrid settings. If, for example, trust emerges as a critical mediator, leaders will recognize the importance of demonstrating competence and integrity over digital channels. If digital communication skill is critical, organizations will be encouraged to invest in leadership training for effective use of collaboration tools. Ultimately, by highlighting the pathways to engagement, the study offers concrete recommendations for leadership development and internal communication strategies, helping organizations to design hybrid work in ways that maintain motivation and performance. This work addresses both scholarly and practitioner demands by providing timely evidence on sustaining employee engagement through digital leadership, trust, and communication in the new world of hybrid work.

2. Research Methods

This study adopted a quantitative survey research design to examine the structural relationships between digital leadership, trust, digital communication, and employee engagement in hybrid work environments. A quantitative approach was deemed appropriate due to its ability to systematically test theoretically grounded hypotheses using empirical data from a large population [8]. Given the model's complexity and the presence of multiple mediating paths, the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique was employed, which is particularly well-suited for predictive modeling in organizational behavior research involving latent constructs and complex causal relationships [9], [10].

Data were collected via an online questionnaire distributed to employees working in hybrid arrangements—defined as working at least one day remotely and one day on-site per week—across industries including IT, finance, consulting, and telecommunications. Hybrid workers were targeted because their work environments encapsulate both remote and face-to-face contexts, making them ideal for analyzing the interplay between digital leadership, communication, and trust. The sampling method used was purposive, selecting employees who self-reported working in hybrid teams for at least six months under the supervision of a direct leader. A total of 415 valid responses were collected, exceeding the minimum sample size requirements for PLS-SEM as established by Hair

et al., who recommend at least 10 times the maximum number of paths pointing at any construct in the structural model [9].

The measurement instruments were adapted from validated scales in the literature. Digital leadership was measured using items based on El Sawy et al.'s conceptualization of digital leadership capabilities in transformation contexts [11], with scale items refined for clarity and hybrid work applicability. Employee engagement was assessed using the Utrecht Work Engagement Scale (UWES), which measures vigor, dedication, and absorption [12]. Trust in leadership was measured using the organizational trust scale adapted from McAllister, focusing on affect- and cognition-based trust [13], while digital communication quality was measured using items developed by Boccoli et al., who validated their scale in remote work environments [14].

All items were measured using 5-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to the full-scale data collection, the instrument was pilot tested with 32 respondents working in hybrid environments to ensure face validity and internal consistency. Based on feedback, minor linguistic adjustments were made to ensure clarity. Reliability and validity of the final constructs were assessed using Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity following Fornell-Larcker criteria [9], [15].

PLS-SEM analysis was performed using SmartPLS 4 software. The choice of PLS-SEM was justified by its robustness to deviations from normality and its suitability for prediction-focused research with complex mediation models [10]. The structural model tested both direct and indirect effects of digital leadership on employee engagement, with trust and digital communication as mediating variables. Bootstrapping procedures with 5,000 resamples were used to assess the statistical significance of path coefficients. Multicollinearity was checked using variance inflation factors (VIF), and model fit was assessed through the standardized root mean square residual (SRMR), with values below 0.08 indicating acceptable fit [9].

This methodological approach allows for a nuanced examination of how digital leadership, as a set of behavioral and technological capabilities, influences employee engagement through key psychosocial and communication processes in hybrid work settings. The inclusion of mediation analysis provides insights into the underlying mechanisms, consistent with recent calls in leadership and organizational communication literature to move beyond bivariate associations and uncover how leadership functions in digitally distributed environments [16].

3. Results and Discussions

The findings of this study underscore the pivotal role of digital leadership in shaping employee engagement within hybrid work environments. Digital leadership not only has a significant direct effect on engagement but also operates through critical mediators—trust in leadership and the quality of digital communication. Trust emerges as the more substantial mechanism through which leadership behaviors are translated into engagement, while communication quality offers a complementary, though comparatively modest, mediating pathway. The structural model demonstrates strong explanatory power, highlighting the importance of relational and communicative processes in digitally mediated leadership contexts. Additionally, model diagnostics and control variables further validate the robustness of the analytical model and reveal nuanced insights into the role of employee tenure.

Digital leadership boosts hybrid employee engagement

The present study found that digital leadership exerts a statistically significant direct effect on employee engagement within hybrid work settings ($\beta = 0.36$, $p < 0.001$), indicating that digitally oriented leadership behaviors—such as leveraging technology to articulate vision, offering virtual support, and maintaining digital presence—generate higher levels of vigor, dedication, and absorption among employees. This demonstrates that even without considering mediators like trust or communication, digital leadership independently and positively shapes engagement.

From the lens of Social Exchange Theory, employees reciprocate digitally mediated support from leaders with heightened engagement. Leaders' use of technology to offer recognition and maintain consistent communication implies investment, prompting reciprocal effort from employees. Furthermore, the Job Demands–Resources (JD–R) model conceptualizes leadership as a key resource; this study empirically extends the JD–R framework by identifying digitally delivered leadership behaviors as valuable job resources that bolster engagement in contexts of heightened autonomy and distributed work demands.

Comparative literature reinforces this association while extending its empirical validity. For instance, Li et al. (2024) reported a similar positive correlation between middle managers' digital leadership and employee engagement in a Chinese context ($\beta \approx .45$, $p < .001$), highlighting that digitally oriented leadership enhances engagement, though empowerment served as a mediator in their study. Likewise, Boccoli et al. (2024) found that transformational leadership, conveyed via digital channels, significantly predicted engagement in remote teams ($\beta \approx .33$), reinforcing the central role of digitally enacted leadership behaviors. Sagbas et al. (2023) also found a positive link between digital leadership and engagement in an academic setting ($\beta \approx .32$) [17]. Compared to these studies, the current research advances knowledge by isolating engagement as a direct outcome of digital leadership in hybrid work arrangements, a setting combining remote and on-site work.

The novelty of this finding lies in its focus on hybrid environments and the standalone predictive power of digital leadership. While previous research has examined digital or transformational leadership in remote or onsite contexts, few have empirically demonstrated its direct effect on engagement in hybrid teams without mediators. Moreover, by conceptualizing digital leadership as distinct from traditional transformational leadership, the study broadens theoretical understanding and confirms its direct relevance in a digital–hybrid workplace.

Despite its strengths, including a sample size sufficient for structural modeling and a direct examination of the focal relationship, limitations should be noted. The cross-sectional design constrains causal inferences; it remains possible that highly engaged employees perceive their leaders as more digitally capable. Additionally, while self-report measures are psychometrically validated, they cannot eliminate common method bias. Unmeasured organizational factors—such as digital infrastructure or leadership training—may also contribute to observed engagement levels. Future research could employ a longitudinal design or collect multi-source data to better clarify directionality and control for shared-method variance.

Measurement choices in this study were grounded in established scales: employee engagement was measured using the Utrecht Work Engagement Scale short form [12], which captures the dimensions of vigor, dedication, and absorption. While burnout has been linked to disengagement [18], this study specifically measured the positive counterpart—engagement—as its own construct. Though this supports the positive role of digital leadership, future models may benefit from integrated frameworks that simultaneously measure engagement and burnout outcomes. Additionally, subsequent studies could explore moderated mediation, as outlined by [19], to test whether the indirect relationship between digital leadership and engagement via mechanisms such as trust or communication varies by employee characteristics or organizational context.

Theoretically, these results refine Leadership and JD–R models by demonstrating that digitally mediated leadership behaviors represent a distinct resource capable of directly enhancing employee engagement. By isolating this direct effect and situating it in hybrid contexts, the study advances our conceptualization of leadership in the digital age. Practically, these findings have important implications for human resources and leadership development. Organizations implementing hybrid work should invest in developing leaders' digital competency—skills that enable clear goal setting, feedback, and recognition via virtual platforms. Training in digital communication tools, virtual team management, and digital presence should become integral components of leadership development. Given the direct impact ($\beta = 0.36$), even moderate improvements in digital leadership could yield measurable increases in engagement. Organizations may also consider integrating digital leadership competencies into performance evaluations and promoting leaders who demonstrate strong digital engagement behaviors.

In summary, this finding emphasizes that digitally oriented leadership exerts a substantial direct influence on employee engagement in hybrid work environments. It corroborates and extends social exchange and JD–R theories by identifying digital leadership behaviors as both resources and stimuli for engagement, while offering actionable insights for organizational practice. Incorporating validated engagement measures [20] and recognizing the relationship with burnout [18], this study invites further research using methodological frameworks like moderated mediation [19] to unpack the dynamics of leadership in contemporary work structures.

Trust strongly mediates leadership–engagement link

The present study uncovers a compelling finding: trust in leadership functions as a partial mediator in the relationship between digital leadership and employee engagement within hybrid work environments. Statistical analysis reveals the following: digital leadership significantly predicts trust ($\beta = 0.42$, $p < .001$); trust, in turn, predicts engagement ($\beta = 0.33$, $p < .001$); and the indirect path from digital leadership through trust to engagement is statistically significant ($\beta = 0.14$, $p < .01$). Notably, the direct effect of digital leadership on engagement ($\beta = 0.36$, $p < .001$) remains significant, confirming that trust accounts for a meaningful—but not exhaustive—portion

of the relationship. These results suggest that digitally empowered leadership behaviors foster trust, which subsequently enhances employee engagement, while the significant direct effect indicates that other mechanisms may also be at play.

Theoretically, this supports Social Exchange Theory [21], according to which employees reciprocate favorable treatment by investing more effort and engagement. Digital leadership behaviors—such as demonstrating responsiveness via online communication, acknowledging team contributions, or providing clarity in digital settings—signal organizational investment. Employees reciprocate with greater affective engagement. The mediated pathway through trust also resonates with Leader–Member Exchange (LMX) theory, which posits that high-quality dyadic relationships—characterized by mutual respect and trust—enhance employee attitudes and outcomes [22]. Here, digital leadership enhances LMX quality, strengthening engagement outcomes.

Comparison with prior empirical research underscores both resonance and extension. A recent study of hybrid workplaces found that transparent digital communication fostered trust, which in turn drove team cohesion. Although that study focused on organizational support, the mediating role of trust mirrors the mechanism identified here, albeit with digital leadership as the antecedent. Similarly, Li documented that trust mediated the relationship between perceived supervisor support and work engagement in remote settings, with mediation strength comparable to the $\beta = .12$ reported in our model. These parallels confirm the centrality of trust in digitally mediated leadership–engagement dynamics [5]. However, while Li et al. examined general support, our study specifically operationalizes support through digital leadership behaviors in hybrid configurations, hence adding conceptual precision.

The novelty of this finding resides in its methodological and contextual advancements. While trust is established as a mediator in leadership studies, few have empirically tested its mediating role in the digital leadership–engagement nexus within hybrid work using PLS-SEM. This study advances the field by operationalizing digital leadership as a coherent construct and testing its mechanisms quantitatively in a hybrid organizational context—an area growing in relevance yet underexplored. The study corroborates the importance of trust while demonstrating that even partial mediation is meaningful, underscoring the complex dynamics at play.

Critical analysis reveals both strengths and limitations. A major strength lies in the methodological robustness: the sample ($n \approx 415$) and use of PLS-SEM offer rigor in estimating mediation paths. Additionally, the validity of constructs such as trust and engagement is supported by prior literature [12], [13]. Nonetheless, some limitations must be acknowledged. The cross-sectional design precludes causality interpretation; while the mediation aligns logically with theory, longitudinal or experimental designs would yield stronger inference. Second, self-report biases—though mitigated via validated scales—may inflate relationships. Third, contextual variables, such as organizational digital infrastructure or cultural norms, were not measured and may confound results. For instance, stronger digital tools might both enhance trust and engagement independently of leadership behaviors. Alternative explanations could also exist: highly trusting and engaged employees may perceive their leaders more positively, reversing causality.

Theoretical implications are multifaceted. First, the finding enriches digital leadership theory, situating trust as a mediating psychological mechanism. This aligns digital leadership within LMX and Social Exchange frameworks, linking digital behaviors to affective bonds and motivational outcomes. Second, it invites wider use of mediated path modeling in hybrid work studies, encouraging scholars to examine multiple mechanisms beyond trust—such as psychological safety or digital identity. As insights into digital leadership expand, future models could incorporate additional mediators for a more holistic view.

Practically, these insights offer clear guidance for organizational leaders. Since trust plays a partial but significant role in transferring the impact of digital leadership, leaders should actively foster trust through virtual interactions—such as transparent decision-making, recognition in digital forums, and consistent virtual office hours. Organizations can operationalize this by establishing digital trust-building protocols, including leader training, norms around communication transparency, and performance evaluations that reflect digital trust behaviors. For hybrid work policies, leaders should be encouraged to invest in personal digital interaction, signaling reliability, empathy, and competence—behaviors that build trust and, by extension, drive engagement.

In summary, the study demonstrates that trust is a meaningful mediator between digital leadership and employee engagement, yet digital leadership also exerts influence through other mechanisms. This nuanced finding enhances theoretical models of leadership in hybrid workplaces and offers evidence-based implications for management practices focused on building digital-age trust and engagement. Future research should pursue longitudinal inquiry, include organizational context variables, and explore parallel mediating mechanisms to further refine our understanding of hybrid leadership dynamics.

Digital communication modestly mediates engagement

The analysis revealed that digital communication quality acts as a statistically significant—but comparatively smaller—mediator in the effect of digital leadership on employee engagement. Specifically, digital leadership positively predicts communication quality ($\beta = .29, p < .01$), which in turn significantly predicts engagement ($\beta = .21, p < .01$). The indirect effect via digital communication is modest yet meaningful ($\beta = .06, p = .04$), underscoring that while clarity, frequency, and responsiveness in digital communication help translate leadership into engagement, their effect is not as strong as that of trust. This indicates that leaders' proficiency with digital channels plays a crucial, though secondary, role in fostering engagement in hybrid teams.

Theoretical foundations support this finding. From the perspective of Media Richness Theory [23], the appropriateness of communication media affects the conveyance of cues and clarity. Higher-quality digital communication assures that messages retain social presence, feedback, and relational content, reducing ambiguity and fostering connection [24]. This aligns with Social Presence Theory, which posits that rich, timely communication enhances interpersonal relationships and employee commitment. Furthermore, digital communication functions as a critical job resource within Rogers' adapted Job Demands–Resources framework for distributed work environments [25], directly influencing engagement by reducing informational and social job demands inherent in hybrid systems.

Empirical comparisons echo our findings. A systematic review by Makowski emphasized the importance of communication frequency and clarity for sustaining engagement in remote and hybrid teams [26]. Another study by Johnson found that leaders' prompt response via digital platforms mediated the relationship between managerial style and employee engagement, with an indirect effect size similar in magnitude ($\beta \approx .05$) [27]. These results affirm that digital communication is a meaningful conduit for leadership effectiveness. Additionally, research by Nagori and Lawton highlighted communication mechanisms—such as protocols for virtual check-ins and information sharing—as vital components in hybrid work design that significantly influence engagement, thereby confirming our mediated pathway [1].

The novelty of this finding lies in three dimensions. First, while earlier research has focused on trust as a primary mediator or on broader leadership constructs, our study isolates digital communication as a distinct mediating mechanism, underscored quantitatively via PLS-SEM. Second, despite its smaller magnitude, the finding supports theoretical pluralism by acknowledging that digital leadership exerts influence through multiple channels, not just through affective trust. Third, it specifies the mechanics of leader effectiveness—where communication acts as a functional tool for engagement—offering practitioners actionable insights.

Strengths of this finding include the employment of validated scales for digital communication quality (e.g., responsiveness, clarity, frequency) and a robust sample size suitable for SEM analyses. The finding also addresses a timely gap in hybrid workplace literature by providing empirical evidence for communication as a mediator. However, several limitations must be acknowledged. The effect size is small, indicating that other mediators likely play larger roles. As the data is cross-sectional, causal direction remains uncertain—especially if employees' engagement levels could influence their perception of leadership communication quality. Self-report measures may introduce common method bias. External contextual factors—such as organizational communication platforms or norms—were not measured and may confound the relationship.

Alternative interpretations should be considered. For example, it is possible that highly engaged employees perceive communication quality more favorably, effectively reversing the causal direction. Moreover, communication quality may operate better as a moderator rather than a mediator, amplifying leadership effects only when communication channels meet certain standards. Theoretical implications from this finding include the recognition that digital communication is a distinct psychological mechanism, supplementing trust and emotional bonds. It underscores the importance of expanding digital leadership theory to explicitly include communication behaviors as functional drivers of engagement. Moreover, applying frameworks like Media Synchronicity Theory [16] could yield deeper insights into why certain digital communication features—such as immediacy or multitasking—enhance engagement.

Practical implications for organizations are significant. Leadership development should include modules on effective digital communication—covering promptness, clarity, tone, and multi-channel presence. Organizations should audit digital platforms for their ability to support rich communication (e.g., video, real-time messaging, visual sharing). Moreover, engagement surveys could track digital communication quality alongside engagement, enabling targeted training. While trust-building remains paramount, enhancing digital communication quality offers a scalable approach to increasing engagement in hybrid teams.

Model fits well and tenure slightly matters

The present study's fourth finding demonstrates that the structural model exhibits excellent overall fit, with a Standardized Root Mean Square Residual (SRMR) of 0.061, well below the conservative threshold of 0.08 frequently cited in PLS-SEM literature [9]. Moreover, the model explains a substantial 51% of the variance in employee engagement ($R^2 = 0.51$), indicating strong explanatory power. Notably, the inclusion of trust and digital communication in mediation paths yielded pronounced improvements in variance explanation beyond the direct path. This suggests that the comprehensive model, including mediators, enhances empirical insight compared to models with only direct effects. The fifth finding reveals that when controlling for gender, age, and organizational tenure, only tenure shows a minor yet statistically significant positive association with employee engagement ($\beta = .11$, $p = .04$). Gender and age did not exhibit any significant effects. This pattern suggests that employees with longer tenure may develop stronger engagement through deeper relationships of trust and familiarity with hybrid work norms. A simplified summary table of the key model metrics is presented in Table 1.

Table 1. Value of Model Component

Model Component	Value
SRMR (model fit)	0.061
R^2 (Employee Engagement)	00.51
Change in R^2 with mediators	+0.15
Control Variable – Tenure (β)	0.11 ($p = .04$)
Control Variables – Gender, Age	Non-significant ($p > .05$)

The strong SRMR of 0.061 confirms that the model's implied covariance matrix corresponds well with observed data, reflecting excellent overall fit [9], [28]. Achieving good global fit in hybrid work research is particularly meaningful, as numerous contextual variables can induce mis-specification. The high R^2 value of 0.51 surpasses the commonly referenced benchmark of 0.30 for social science constructs, indicating that over half of the variance in engagement is captured by digital leadership and its mediational mechanisms [29]. In combining direct and indirect effects, the increase in R^2 suggests that trust and digital communication significantly contribute beyond direct leadership behaviors.

From the lens of Job Demands–Resources (JD–R) theory, the inclusion of mediators reflects a broader conceptualization of digital leadership as an organizational resource. The JD–R model posits that job resources reduce job demands and foster engagement. Digital leadership is conceptualized here as a resource-rich construct; adding trust and communication explicates *how* leaders convert resource deployment into employee states. The higher explained variance confirms the theoretical rationale of resources working collectively. In Social Exchange Theory, the multi-step model mirrors cycles of reciprocity more effectively than single-path formulations. Digital leadership creates exchanges recognized and reciprocated through trust and effective communication, feeding back into stronger engagement.

Comparative literature supports these findings. A recent PLS-SEM study by Perceived Organizational Support scholars reported an SRMR of 0.068 and R^2 of 0.48 in predicting engagement [30]. Similarly, a separate study on feedback-seeking in healthcare reported model fit of SRMR = 0.072 and $R^2 = 0.60$ [31]. Moreover, Judeh's work demonstrated that mediated models consistently outperformed direct-only models in explaining performance outcomes. These parallel results reinforce our assertion that mediation improves both theoretical coherence and empirical performance.

Regarding control variables, the discovery that longer organizational tenure correlates positively with engagement ($\beta = .11$) echoes conclusions from the practitioner-oriented literature suggesting that tenure—more so than age—drives engagement (MSW Mag, 2018). Empirical research also supports this finding; for example, [32] found tenure to be positively associated with engagement, a relationship that surpassed those of age at statistical and practical significance. Xanthopoulou found similar results in university faculty, with tenure showing small but consistent effects on engagement albeit no age or gender differences [25]. The present finding is unique in demonstrating this effect within hybrid work contexts—signaling the stabilizing benefit of accumulated familiarity with organizational digital systems and norms.

Three contributions emerge from these findings. First, model fit and explained variance confirm that digital leadership, when complemented with trust and communication mediators, constructs a cohesive and empirically validated explanatory framework for engagement in hybrid contexts. Second, the research underscores the value of tenure as a demographic covariate—suggesting that hybrid work may disadvantage newer employees, or conversely, that tenure reinforces mastery of digital behavioral resources, familiarity with platforms, and institutional trust. Third, the successful demonstration of good fit and variance in a hybrid model supports the methodological validity of the multi-mediator PLS-SEM approach in similar organizational behavior studies.

Yet, limitations and alternative interpretations must be acknowledged. The cross-sectional design limits causal inference and may inflate model fit metrics due to shared method variance. Common method bias may also affect R^2 and control variables. Further, tenure may proxy for other factors such as job stability, career investment, or seniority compensation, rather than engagement derived purely from experience. It is possible that generational cohort effects or life stage variables tied to tenure influence engagement; longitudinal data would help to disentangle these effects.

From a theoretical standpoint, these findings bolster the JD–R framework by demonstrating that resources (digital leadership, mediated by trust and communication) collectively drive engagement. They also reinforce findings from social exchange theory demonstrating that longer associations with an organization strengthen reciprocal dynamics. Notably, the positive effect of tenure suggests that relational and technical familiarity play a role in reciprocity—offering insight into the long-term dynamics of digitalized work.

Practically, organizations should invest in digital leadership development that explicitly fosters trust and communication. Ensuring that hybrid systems promote transparent communication, regular digital check-ins, and leadership visibility should be prioritized. Moreover, HR systems should include onboarding programs that shorten the tenure–engagement gap for new employees by accelerating trust-building and digital acclimation. Mentorship programs pairing more tenured employees with newcomers can counteract the tenure alignment effect.

To further assess model robustness, future studies could employ longitudinal designs to assess temporal stability and incorporate other mediators such as psychological safety or digital identity. Multi-level modeling might assess whether tenure effects differ across units or cultures, supporting more granular organizational interventions. This findings, thus, collectively affirm the structural model's validity and the salience of tenure effects. A fit of SRMR = 0.061 and R^2 of 0.51 supports the model's strength, while the tenure finding highlights a meaningful demographic influence on digital-era engagement. Together, they enrich theoretical frameworks and yield actionable insights for sustaining engagement in hybrid work environments.

4. Conclusion

This study examined the influence of digital leadership on employee engagement within hybrid work environments, focusing particularly on the mediating roles of trust in leadership and digital communication. The findings provide comprehensive responses to the research questions, offering both theoretical contributions and practical insights for the field of Human Resource Management (HRM). The first key result demonstrated that digital leadership significantly enhances employee engagement, underscoring that leaders who are digitally competent and supportive can inspire greater enthusiasm, commitment, and psychological investment in work. Secondly, trust in leadership emerged as a partial mediator, indicating that employees are more engaged when they perceive their digital leaders as reliable and supportive. Third, digital communication was also found to be a significant mediator, highlighting how effective virtual interaction—marked by clarity, transparency, and consistency—can further strengthen employee engagement in hybrid contexts. Together, these relationships were statistically significant, with the structural model explaining 51% of the variance in employee engagement. These findings have important implications for HRM theory and practice. Theoretically, the results extend the Job Demands–Resources (JD–R) model and Social Exchange Theory by situating digital leadership as a key job resource that operates through relational pathways such as trust and communication. This reinforces the argument that leadership in hybrid environments must be understood not only in terms of competencies but also relational quality and communicative effectiveness. The study advances the theoretical discourse on leadership in digitally mediated contexts, where emotional intelligence, trust-building, and communication become even more crucial due to the physical distance between leaders and teams. Practically, the results suggest that organizations must prioritize the development of digital leadership skills, not only in terms of technical fluency but also relational competencies. HRM departments should design leadership development programs that emphasize trust-building behaviors and digital communication strategies. Furthermore, digital infrastructures must be designed to support not just information sharing but relational interaction, allowing for timely, consistent, and authentic engagement

between leaders and employees. The finding that tenure also has a modest positive effect on engagement implies that targeted support for newer employees—such as onboarding and mentoring—may improve engagement in hybrid settings. Nevertheless, several limitations should be acknowledged. The cross-sectional design of this study prevents causal inference, and future longitudinal research is needed to understand how these relationships evolve over time. Although PLS-SEM is suitable for exploratory modeling, experimental or mixed-method studies could further validate the observed effects and uncover underlying mechanisms. The reliance on self-reported data also introduces a risk of common method bias, despite statistical measures taken to minimize it. Additionally, the findings may not generalize across all industries or cultural contexts, as the sample was limited to a specific organizational demographic. Future research should explore other potential mediators or moderators, such as digital fatigue, psychological safety, or organizational culture. Investigating industry-specific or cross-cultural samples would enhance the generalizability of the findings. A mixed-method approach could also offer richer insights into employees' lived experiences under digital leadership.

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