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Unravelling the Paradox between Digital Leadership and Remote Workers' Engagement

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Abstract

In recent years, the world has witnessed a steady rise in remote working. This mode of remote work presents unique characteristics and challenges. Given the widespread adoption of work-from-home arrangements, understanding the work engagement of remote employees has become an intriguing question. This study investigates the role of digital leadership in shaping organizational culture and, in turn, influencing employee engagement. Using a structured survey questionnaire, data were systematically collected from a sample of 311 remote workers. The findings reveal that digital leadership significantly influences organizational culture, which subsequently enhances employee engagement. Specifically, the study confirms the mediating role of organizational culture in the relationship between digital leadership and employee engagement. The results suggest that digital leadership fosters an adhocracy culture, which, in turn, promotes higher levels of work engagement among employees. The discussion and implications of these findings are presented in light of the study's results.

Keywords: *Digital Leadership, Organizational Culture, Employee Engagement, Remote Workers and Performance.*

Introduction

The world has witnessed an increasing trend toward remote working. The COVID and post-COVID eras have seen a steady rise in the number of employees transitioning to remote work (McPhail, Chan, May, & Wilkinson, 2024). Remote working—also known as work from home (WFH) or virtual work—is a work arrangement in which employees perform their work related responsibilities using digital technologies outside the office premises and from another location, (Choudhury, Foroughi, & Larson, 2021). Approximately 28% of the global workforce now engages in remote work at least part-time (Randall et al., 2022), reflecting a notable increase from pre-2020 levels of around 15%. Remote work helps reduce costs and provides access to a broader talent pool. From the employee's perspective, it offers freedom, flexibility, and better work-life balance (Licite-Kurbe & Leonovica, 2021; Sullivan, 2012).

Despite numerous advantages across various aspects of work life, the challenge remains in motivating employees and sustaining consistent performance. Recent research has focused on employee performance, productivity, motivation, and goal achievement among remote workers (Arifin & Anindita, 2022; Meiryani et al., 2022). A growing body of literature also explores the factors influencing employee engagement in remote work settings. Supportive environments, open communication, rewards, and several HR practices have shown a strong impact on enhancing worker engagement (Albrecht, Bakker, Gruman, Macey, & Saks, 2015). Similarly, studies consistently highlight the role of supervisors and leaders in effectively engaging remote employees. For instance, leader support (Pati & Kumar, 2010), attachment to supervisors (Takahashi, Yokoya, & Higuchi, 2023), and telework-oriented leadership (Günther, Hauff, & Gubernator, 2022) have all been linked to employee engagement.

Despite strong evidence supporting the role of leaders and managers in engaging employees, the literature offers limited insight into the processes and underlying mechanisms through which leadership influences employee engagement. In the same vein, a few empirical studies support the idea that digital

leadership enhances various aspects of work engagement. However, the extent to which digital leadership improves the engagement of remote workers remains underexplored (Mazzetti et al., 2023; Wells et al., 2023).

Given these research gaps, our study aims to examine the role of digital leadership in enhancing remote workers' engagement. Drawing on the Job Demands-Resources (JD-R) model, the study investigates the mediating role of organizational culture in linking digital leadership with employee engagement. The JD-R model explains how job characteristics affect employee well-being and performance (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). It posits that job demands (e.g., workload, emotional pressure) can lead to stress and burnout, whereas job resources (e.g., support, autonomy, feedback) help reduce demands, foster motivation, and enhance engagement. The model suggests that when resources are adequate, employees are more likely to remain energized and committed—even in high-demand roles.

Digital leadership is characterized by a combination of technological competence, strategic vision, and people-centered management. Key attributes include innovation, forward thinking, and the ability to leverage emerging technologies for transformation. Digital leaders are agile and adaptive, responding quickly to change and fostering a culture of continuous learning. These qualities serve as crucial resources for supporting remote employees. Remote workers benefit from strategic vision, collaboration, and self-development—elements that are fueled by digital leaders from afar (Kato, Chiba, & Shimazu, 2021; Mazzetti et al., 2023). In essence, digital leaders help establish a conducive culture that enables remote employees to work effectively (Wells et al., 2023).

Collectively, our study contributes to the existing literature in several ways. First, it presents a mediated model connecting digital leadership with employee engagement through the creation of a contextually relevant organizational culture. Second, the model is tested within the unique context of remote workers, offering practical insights for managers seeking to enhance employee engagement. Finally, the research design incorporates a time-lagged, dyadic data collection approach, with data gathered from supervisors and employees across three different time points.

Literature Review

Theoretical Foundation

The Job Demands-Resources (JD-R) model explains how workplace factors influence employee work involvement and their work efficiency. It provides a balancing view of job demands and related resources (Demerouti et al., 2001). The imbalance between the two, cause stress, demotivation and performance related issues. Job demands includes factors like workload, time pressure, emotional strain and job resources comprises autonomy, colleague support, supervisory feedback etc. While job demands can lead to work related issues if excessive, job resources help to neutralize the negative effects of demands. The model suggests that high resources can foster engagement and performance even in demanding jobs, making it a valuable framework for understanding how to create healthy and productive work environments.

The Job Demands-Resources (JD-R) model explains the relationship between digital leadership style and employee work engagement by highlighting how leaders influence both job demands and job resources (Mazzetti et al., 2023). Remote workers face challenges such as communication barriers, social isolation, work to family life interferences, distractions at home, access to resources, and difficulties in collaboration and supervision. Digital leadership characterized by vision, digital literacy, innovation, adaptability, collaboration, empowerment, cyber awareness, and continuous learning (Kato et al., 2021). By doing so, they develop a culture aligned with the dynamics of remote environment. in a culture, aligned with working norms, help them to collaborate and control the challenges. Taken together, digital leadership increases the resources, energize employees, foster motivation, and lead to higher engagement. On the other hand, poor or authoritarian leadership may increase job demands (e.g., stress, workload, role conflict) while failing to provide adequate resources, thereby reducing engagement (Mazzetti et al., 2023; Wells et al., 2023). Thus, the JD-R model shows that digital leadership affects engagement by shaping the balance between demands and resources in the workplace.

Hypothesis Development

Digital Leadership and Organizational Culture

Digital leadership is the ability to lead and drive transformation in an organization by effectively leveraging digital technologies, fostering innovation, and creating a culture that adapts to rapid technological change (Kane, Palmer, Phillips, Kiron, & Buckley, 2015). Digital leadership helps to enhance organizational commitment, psychological well-being, and employee performance in the digital era. It has turned out to be a key factor in digital transformation (Adie, Tate, Cho, & Valentine, 2022; Ushaka Adie, Tate, & Valentine, 2024). At organizational level, digital leadership is a precursor to open innovation, competitiveness and sustainability (Khaw, Teoh, Abdul Khalid, & Letchmunan, 2022).

However, leadership in general is responsible for the culture of the organizations. Studies have shown that the ethical culture is the product of ethical leadership and inclusive climate is the result of inclusive leadership (Li, Bhutto, Nasiri, Shaikh, & Samo, 2018; Paais & Pattiruhu, 2020). Following the same line of thoughts, digital leadership helps to form digital culture, a way to understand how people interact online, share information, collaborate using digital tools, adapt to technological change, and form communities through digital platforms (Shin, Mollah, & Choi, 2023; T. Wang, Lin, & Sheng, 2022). According to Cameron and Quinn (2011), The organization may take on different forms of Competing Values Framework (CVF). The culture can be shaped into clan, adhocracy, market, or hierarchy, also known as collaborate, create, compete or control, respectively. Being adaptive in nature, digital leadership may help foster resilience, flexibility, cohesion, innovation, competitiveness and control (Demir, Ayyildiz Unnu, & Erturk, 2011). However, digital leadership may yield a adhocracy environment in view of the values embedded in their core attributes. Based on these arguments, we may assume the following;

H1: Digital leadership influences the organizational culture in such a way that the adhocracy culture is flourished more intensively as compared to create, compete or control.

Organizational Culture and Employee Engagement

Culture of the organization plays a crucial role in shaping employee work engagement by creating an environment that either supports or hinders motivation, commitment, and performance (Anggapradja & Wijaya, 2017). A positive culture that values trust, collaboration, recognition, and employee development fosters a sense of belonging and purpose, which, in turn, leads to higher levels of engagement (Chakraborty, Sharada, & Anand, 2024). When employees feel aligned with organizational values and are supported by leadership, they are more likely to be immersed, enthusiastic, and dedicated to their work (Abduraimi, Mustafi, & Islami, 2023). Conversely, a toxic or rigid culture can cause low job involvement and reduced productivity (Rasool, Wang, Tang, Saeed, & Iqbal, 2021). Research also supports the importance of aligning organizational culture with employees' work characteristics, emphasizing the need for a contextually relevant culture to facilitate full immersion in their roles (Chakraborty et al., 2024).

Remote workers typically enjoy autonomy, empowerment, flexibility, and self-reliance. They tend to be more results-oriented and capable of adapting to changing work dynamics (Wells et al., 2023). In this context, an adhocracy culture—characterized by high flexibility, innovation, creativity, risk-taking, and adaptability—provides an enabling environment for remote employees (Eriksson & Santesson, 2021; Łukasik-Stachowiak, 2022). Such a culture enhances their dedication, immersion, and persistence at work. Hence, we hypothesize that:

H2: *Organizational culture influences the work engagement of remote workers in such a way that an adhocracy culture provides a relatively more enabling environment compared to other competing cultural frameworks.*

Mediating Role of Organizational Culture

Digital leadership is characterized by a visionary mindset that embraces technological change and disruption as opportunities for growth (Shin et al., 2023). Digital leaders adopt an agile and adaptable

approach to strategy, possess strong competencies in digital tools and data analytics for informed decision-making, and maintain a relentless focus on customer-centricity (Adie et al., 2022). They empower their teams, promote adaptability and flexibility, foster a collaborative and innovative environment, and prioritize continuous learning to navigate the evolving digital landscape (Adie et al., 2022).

As a result, digital leadership nurtures a culture of experiential learning, innovation, and empowerment (T. Wang et al., 2022). Such leaders emphasize flexibility and external focus, aiming to drive innovation and adapt swiftly in dynamic environments. For remote employees—who often work with considerable autonomy and minimal formal structure—this leadership style fosters an adhocracy culture (Asfahani, 2025). This culture enables quick responses to market changes and emerging opportunities.

With a high degree of autonomy, flexibility, decision-making authority, and space to implement innovative ideas, employees feel empowered (Erhan, Uzunbacak, & Aydin, 2022). This empowerment translates into emotional, intellectual, and behavioral commitment to their work, their teams, and their organizations—leading to greater discretionary effort and a strong desire to contribute to organizational success (Eriksson & Santesson, 2021).

Organizational culture plays a crucial role in shaping employee work engagement by creating an environment that supports or hinders motivation, commitment, and performance (Anggapradja & Wijaya, 2017). A positive culture that values trust, collaboration, recognition, and employee development fosters a sense of belonging and purpose, leading to higher levels of engagement (Parent & Lovelace, 2018). When employees feel aligned with organizational values and are supported by leadership, they are more likely to be immersed, enthusiastic, and dedicated to their work. Conversely, a toxic or rigid culture can lead to disengagement, low morale, and reduced productivity (Agber, Ihuman, Shakumeh, & Igba, 2025). Studies also endorse the cultural alignment with employees work characteristics, hence demands contextually relevant culture to fully immerse into their jobs (Paarlberg & Perry, 2007).

Remote workers enjoy autonomy, empowerment, flexibility, and self-reliance. They are more result oriented and adapt changing work dynamics regularly (B. Wang, Liu, Qian, & Parker, 2021). In this way, adhocracy culture fueled with high flexibility, Innovation, creativity, risk-taking and, adaptability, provides an enabling environment to work for remote employees, that help to enhance their dedication to work, immersion and persistence (Meneses & Aguiar, 2025). Hence we hypothesize the following;

H3: Organizational culture influences work engagement of remote workers in a way that adhocracy culture provides the relatively enabling environment comparing other competing frameworks.

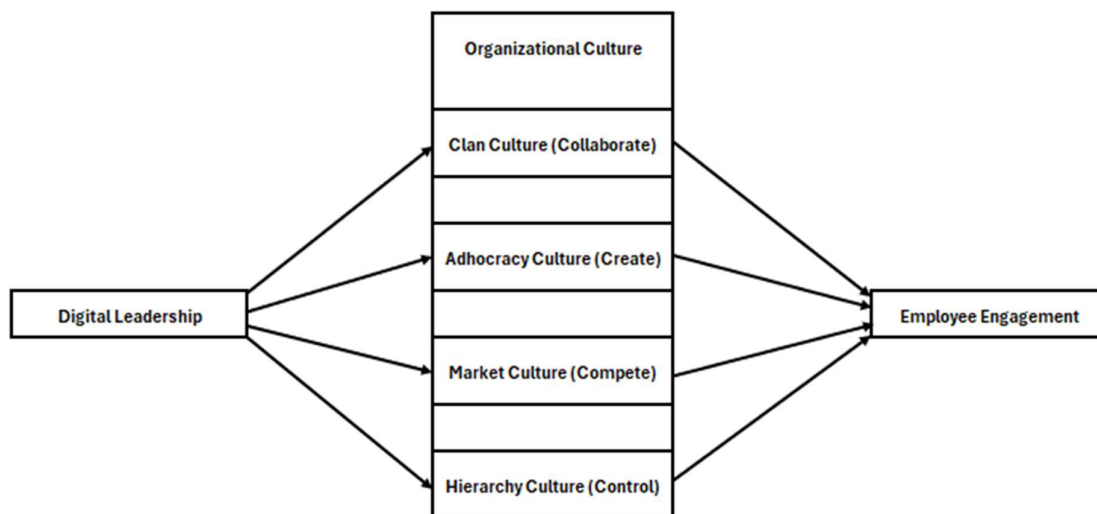


Fig 1. Research Model

Methodology

Sampling and Data Collection

In view of the nature and variables of the study, data were collected from employees working remotely at different locations across various organizations. Many multinational and local organizations transitioned to remote working following the COVID-19 pandemic. Therefore, a considerable pool of organizations was identified in major cities such as Islamabad, Lahore, and Karachi, where head offices are typically located. Organizations were selected using a snowball sampling method, beginning with the authors' professional contacts. This listing of organizations was further used to develop a sampling frame, enabling researchers to reach employees through online means. Employees with at least one year of remote working experience were selected, as they were expected to have a sound understanding of the study variables.

Procedure

Data were collected using a structured questionnaire survey, which was converted into an online format. Employees from various hierarchical levels were invited to participate. The study followed a time-lagged design, and data were collected at three different time points. At the first time interval (T1), responses related to digital leadership were obtained from employees working at different remote locations. After one month (T2), the same employees responded to questions on organizational culture. Finally, after another one-month interval (T3), employee engagement data were collected from their immediate supervisors.

A unique code (or employee ID) was assigned to each participant to match responses across the three waves. Demographic information was collected at all three stages to ensure consistency and accuracy. In total, 500 questionnaires were initially distributed, and 369 responses were received at T1. All 369 respondents were approached and a total of 341 valid responses were received at T2, and finally, at T3, 311 responses were obtained and analyzed using SmartPLS 4.0.

Since survey-based data collection is prone to common method bias, several procedural remedies were employed, as recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003). For instance, a cover letter accompanied each questionnaire, explaining the study's purpose, significance, and measures taken to ensure confidentiality and anonymity. Participants were assured that there were no right or wrong answers. A brief profile of the authors, along with contact details, was also provided to address any participant concerns. Participation was entirely voluntary, and respondents were free to withdraw at any time. The time-lagged data collection design further helped to reduce the risk of common method variance. During the data collection period, no significant events were observed that could distort or influence participant perceptions.

Measures

All constructs were adopted from well-established and validated sources. Different response formats were employed depending on the nature of each scale.

Digital Leadership: Digital leadership was measured using the measured developed by Abbu, Khan, Mugge, and Gudergan (2025). The scale consists of 25 items that capture key dimensions of human-centric digital leadership, such as digital vision, collaboration, adaptability, and employee empowerment. A 7-point Likert scale was used to capture responses, with anchors ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Sample items include: "My leader embraces digital tools to improve work processes.", "My leader encourages continuous learning in response to digital change."

Organizational Culture: Organizational culture was assessed using the Organizational Culture Assessment Instrument (OCAI) developed by Cameron Kim and Quinn Robert (1999). The OCAI is grounded in the Competing Values Framework and includes six dimensions of organizational culture, each represented by four descriptive statements reflecting the four culture types: Clan, Adhocracy, Market, and Hierarchy. Participants were asked to allocate 100 points among the four alternatives in each item to indicate the extent to which each statement matched their organization's current culture. Sample items include, "The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves." (Clan culture), "The organization is a dynamic and entrepreneurial

place. People are willing to take risks.” (Adhocracy culture), “The organization is very results-oriented. A major concern is with getting the job done.” (Market culture), “The organization is a very controlled and structured place. Formal procedures generally govern what people do.” (Hierarchy culture)

Employee Engagement: Employee engagement was measured using a short version of the Utrecht Work Engagement Scale (UWES) comprising 17 items, developed by Schaufeli, Bakker, and Salanova (2006). Participants responded on a 7-point frequency scale ranging from 0 (Never) to 6 (Always). Sample items include: “To me, my job is challenging.” and “When I am working, I forget everything else around me.”

Results

Demographic Profile of the Participants

Table 1. Demographic Analysis			
Variable	Items	Frequency	Percent
Age	20-30	143	46.0
	31-40	113	36.3
	41-50	11	3.5
	51-60	23	7.4
	61 or Above	21	6.8
Gender	Male	165	53.1
	Female	146	46.9
Education	Metric	18	5.8
	Intermediate	23	7.4
	Bachelors	122	39.2
	Masters	148	47.6
Experience	1 - 2 Years	113	36.3
	2 - 5 Years	102	32.8
	6 - 10 Years	47	15.1
	More than 10 years	49	15.8
Income	Less than Rs. 100,000	61	19.6
	Rs. 100,000 to Rs. 199,999	107	34.4
	Rs. 200,000 to Rs. 299,999	55	17.7
	Above Rs. 300,000	88	28.3

The demographic profile of the study participants, presented in Table 1, shows that the majority were between 20 and 30 years old, comprising 46% of the sample, followed by those aged 31–40 years, who accounted for 36.3%. Participants aged 41–50 years made up a smaller portion at 3.5%, while those aged 51–60 and 61 or above represented 7.4% and 6.8%, respectively. In terms of gender, male participants constituted 53.1% of the total sample. While Pakistan is generally considered a male-dominated society, it is encouraging to note that female participation was also substantial, with females comprising 46.9% of the respondents. The educational background of participants appeared well-balanced. A significant proportion (47.6%) held a Master’s degree, followed by 39.2% with a Bachelor’s degree. Regarding professional experience, 36.3% of respondents reported having 1–2 years of experience, while 32.8% had 2–5 years. Those with 6–10 years of experience accounted for 15.1%, and 15.8% had more than 10 years of experience. Income distribution among participants was also fairly reasonable. About 34.4% reported monthly earnings between Rs. 100,000 and Rs. 199,999, while the second-highest group, 28.3%, earned Rs. 300,000 or above. These findings suggest that remote working provides a viable opportunity to earn a reasonable income, especially considering the cost of living in developing countries.

Descriptive Statistics, Correlations, and Reliabilities

Table 2. shows the descriptive statistics, bivariate correlations and the Cronbach's alpha reliabilities. Consistent with the previous studies, statistically significant correlation is found between the hypothesized relationships. Correlation values between digital leadership and different organizational culture values are found as Clan ($r = 0.130$, $p < 0.05$), Adhocracy ($r = 0.250$, $p < 0.01$), Hierarchy ($r = 0.157$, $p < 0.05$), and Market ($r = 0.146$, $p < 0.05$). Whereas, Correlation values between different organizational culture values to employee engagement is reported as Clan ($r = 0.201$, $p < 0.05$), Adhocracy ($r = 0.193$, $p < 0.05$), Hierarchy ($r = 0.179$, $p < 0.05$) and Market ($r = 0.168$, $p < 0.05$).

Table 2. Descriptive, Correlation and Alpha Reliabilities									
S #	Variables	Mean	St Dev	1	2	3	4	5	6
1	Digital Leadership	4.70	0.93	(0.91)					
2	Clan	33.03	17.87	.130*	(0.89)				
3	Adhocracy	41.73	28.32	.250**	.471**	(0.96)			
4	Hierarchy	29.48	16.45	.157**	.831**	.444**	(0.73)		
5	Market	29.35	16.23	.146*	.848**	.458**	.980**	(0.75)	
6	Employee Engagement	4.38	1.11	.247**	.201**	.193**	.179**	.168**	(0.95)
*. Correlation is significant at the 0.05 level (2-tailed).									
**. Correlation is significant at the 0.01 level (2-tailed).									

Multiple Regression Analysis (Direct Effects)

Multiple linear regression analysis was employed to test Hypotheses 1 and 2. Results showed that digital leadership had a significant positive effects on organizational culture. The beta coefficients of the effects of digital leadership on the different organizational culture values are reported as Clan ($\beta = 2.489$, $p < 0.05$), Adhocracy ($\beta = 7.604$, $p < 0.001$), Hierarchy ($\beta = 2.767$, $p < 0.01$), and Market ($\beta = 2.537$, $p < 0.01$). Among all the organizational cultural values, adhocracy showed largest impact, this confirming H1.

Likewise the results also confirmed significant positive effects of organizational culture values on employee engagement. Cultural values such as Clan ($\beta = 0.013$, $p < 0.001$), Adhocracy ($\beta = 0.008$, $p < 0.01$), Hierarchy ($\beta = 0.012$, $p < 0.01$), and Market ($\beta = 0.012$, $p < 0.01$) significantly predicted the remote workers engagement. Among all the organizational cultural values, Clan showed the largest impact thus our H2 is rejected.

Table 3. Direct Effects Digital Leadership on Organizational Culture Values								
Predictor	Criterion	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.	Adj R ²	F
		B	Std. Error	Beta				
Digital Leadership	Clan	2.489	1.082	.130	2.300	.022	0.014	5.290
Digital Leadership	Adhocracy	7.604	1.675	.250	4.541	.000	0.060	20.620
Digital Leadership	Hierarchy	2.767	.992	.157	2.788	.006	0.021	7.770
Digital Leadership	Market	2.537	.981	.146	2.588	.010	0.018	6.690

Table 4. Direct Effects of Organizational Culture Values on Employee Engagement

Predictor	Criterion	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.	Adj R ²	F
		B	Std. Error	Beta				
Clan	Employee Engagement	.013	.003	.201	3.612	.000	.037	13.050
Adhocracy	Employee Engagement	.008	.002	.193	3.453	.001	.034	11.920
Hierarchy	Employee Engagement	.012	.004	.179	3.195	.002	.029	10.210
Market	Employee Engagement	.012	.004	.168	3.004	.003	.025	9.027

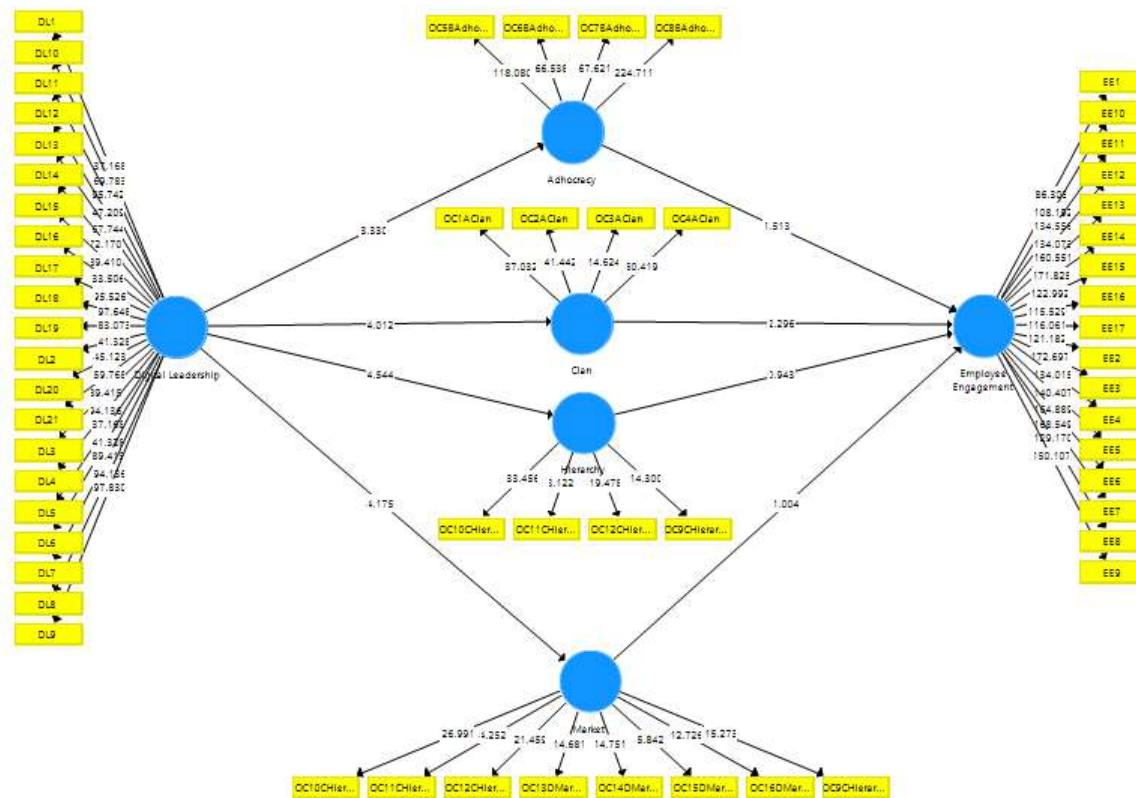
**Fig 2. Path Model****Multiple Regression Analysis (Indirect Effects)**

Table 6 presents the indirect effects of digital leadership on employee engagement through four organizational culture values. "BootLLCI" (Bootstrap Lower Level Confidence Interval) and "BootULCI" (Bootstrap Upper Level Confidence Interval) are calculated with the 95% confidence interval for the indirect effect. Confidence interval if does not include zero, suggests a statistically significant mediating effect. The indirect effect of Clan as a mediator is 0.0266, with a 95% bias-corrected bootstrap confidence interval ranging from 0.0079 to 0.062 and the interval does not contain zero confirming significant mediation between digital leadership and employee engagement. Likewise, adhocracy shows an indirect effect of 0.0416, which is the largest among the four mediators. Its 95% confidence interval is between 0.0041 and 0.0848 and does not contain zero.

The indirect effect for Hierarchy is 0.0268, with a 95% confidence interval from 0.0066 to 0.063 and for Market, the indirect effect is 0.0235, with a 95% confidence interval ranging from 0.0064 to 0.0562. the confidence interval for both hierarchy and market doesn't contain zero confirming the significant mediating role. Among all the four cultural values adhocracy shows largest indirect effects, thus confirming out H3.

Table 5. Direct Effect of Digital Leadership on Employee Engagement

Mediator	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Clan	0.2683	0.0653	4.108	0.0001	0.1398	0.3968
Adhocracy	0.2533	0.0673	3.7647	0.0002	0.1209	0.3857
Hierarchy	0.2681	0.0659	4.0687	0.0001	0.1384	0.3977
Market	0.2714	0.0659	4.1212	0.0000	0.1418	0.401

Table 6. Indirect Effect of Digital Leadership on Employee Engagement

Mediator	Effect	Boot SE	BootLLCI	BootULCI
Clan	0.0266	0.0133	0.0079	0.062
Adhocracy	0.0416	0.0204	0.0041	0.0848
Hierarchy	0.0268	0.0141	0.0066	0.063
Market	0.0235	0.0121	0.0064	0.0562

Discussion and Findings

Our study aimed to examine a mediating model involving digital leadership, organizational culture, and employee work engagement. In this model, organizational culture is shaped by a set of leadership attributes termed *digital leadership* in our study, which subsequently leads to enhanced employee engagement. The study primarily gathered responses from remote workers engaged in various work-related activities at their respective locations. These responses focused on the extent to which leaders demonstrate digital leadership qualities, the type of organizational culture that emerges, and the resultant level of engagement employees feel toward their work.

The results confirmed the mediating role of organizational culture, specifically showing that an *adhocracy* type of culture emerges from digital leadership practices. Adhocracy culture is externally focused, values flexibility, and is characterized by innovation, creativity, and adaptability (Cameron Kim & Quinn Robert, 1999). In such environments, employees feel energized and deeply engaged in their work (Kamphuis, 2025). When leaders guide organizations through digital transformation—by leveraging technology, fostering innovation, and empowering employees—they create the conditions for adhocracy culture to flourish (T. Wang et al., 2022). This culture drives innovation, agility, and growth-mindset (Radu, 2023). It thrives in uncertain environments and promotes a future-oriented mindset where creativity and experimentation are the norms. However, it also requires careful management to avoid chaos and instability (Hernez-Broome & Hughes, 2004).

With strategic vision, technological competence, and a human-centric approach to change and performance enhancement, digital leaders foster a culture of flexibility, innovation, and calculated risk-taking (Ahmadi, Ardalan, Ghanbari, & Afzali, 2023; Petry, 2018). Organizations with this type of culture prioritize creativity and experimentation, encouraging employees to think outside the box and challenge conventional norms (Ahmadi et al., 2023). Leadership tends to be decentralized, and teams are empowered to make quick decisions in response to changing market demands (Giannini & Bowen, 2019). This culture thrives in dynamic environments where adaptability and forward-thinking are essential for success. In such settings, remote employees feel energized and emotionally connected to both their work and the organization (Mohammed, Khan, & Syed, 2023).

The enabling environment deeply engages remote employees in their roles (Abduraimi et al., 2023). Employee engagement reflects the emotional commitment and enthusiasm individuals have toward their work and organization (Chakraborty et al., 2024). Engaged employees, even while working remotely, are self-motivated, proactive, and willing to go beyond their basic job responsibilities because they genuinely care about the organization's success. Notably, remote employees experience a high level of *absorption*—being fully concentrated and deeply immersed in their work. They also exhibit a strong sense of involvement, enthusiasm, and pride in their job. A supportive adhocracy culture further fosters high energy, mental resilience, and a strong willingness to invest effort into work (Parent & Lovelace, 2018). Altogether, organizational culture plays a vital role in nurturing remote employees' emotional and cognitive commitment to their roles and the organization (Meneses & Aguiar, 2025).

Theoretical Implications

Our study extends the current literature in several ways. Theoretically, it connects digital leadership to employee engagement through organizational culture, particularly by emphasizing the value of adhocracy. Secondly, the study focuses on a theoretically relevant context—remote workers—to provide strong empirical evidence. The findings yielded robust results for the population under investigation. Lastly, the study complements the Job Demands-Resources (JD-R) Model, which explains how the balance between job demands and resources influences employees' work-related behavior and goal achievement. The model suggests that job demands (e.g., workload, technical glitches, workgroup isolation, and coordination challenges) can lead to stress and burnout when excessive, whereas job resources (e.g., digital support, autonomy, and feedback) help remote employees remain motivated and engaged. Importantly, resources provided by digital leaders—such as support, mentoring, team building, a clear vision, and defined goals—can help mitigate the negative effects of remote work demands like isolation, monotony, work-family conflict, and technostress, thereby becoming key drivers of work engagement.

Practical Implications

Our study also presents compelling implications for practicing managers and corporate leaders working with remote employees. For instance, it highlights the need to upgrade and transform hiring processes to identify and select individuals who exhibit digital leadership attributes such as a positive attitude, ethical use of AI, a growth mindset, a proven track record, clear vision and direction, skills acquisition, and a participative style. The study also emphasizes the importance of succession planning, suggesting that employees being considered for promotion should be evaluated based on the core characteristics associated with effective digital leadership. To support this, organizations should develop and utilize various screening methods and psychometrically sound instruments that can accurately assess digital leadership potential. Finally, current leaders who manage remote teams across different sectors should be trained to develop essential capabilities in digital environment such as social skills, managing change, communication, tech-savviness, e-team collaboration, and trustworthiness. Various training interventions have been introduced to support this transformation and prepare individuals to take on digital leadership roles.

Limitations and Future Directions

Like other studies, our findings have certain limitations, and the results should be interpreted with caution. For instance, the survey method is inherently susceptible to social desirability bias. Although various steps were taken to minimize this bias, the possibility of socially desirable responding cannot be entirely ruled out. Additionally, while the study employed a time-lagged design to better assess causality, the ideal interval for psychological and behavioral research—typically ranging from 3 to 6 months—could not be fully achieved in this study. Future research could adopt a longitudinal design to examine whether the results are sensitive to the passage of time. Moreover, experimental designs and objective measures may be employed in future studies to further validate these findings.

Given the broad applicability of digital leadership across sectors, the proposed model could also be replicated in other populations—such as project-based employees, hospitality workers, sales teams, or medical professionals—to explore how digital leadership shapes organizational culture and its subsequent outcomes.

Finally, future research could incorporate additional mediators and moderators into the model. The cultural impact fostered through digital leadership may lead to outcomes such as innovative work behavior, psychological well-being, thriving at work, goal achievement, and team cohesion.

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