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Employee Engagement in the Hybrid Work Era: Exploring the Relationship between Leadership Styles and Workplace Productivity

Dr. R. Thanigaiyarasu¹, Dr. Sunita Tripathi², Mynavathi L³, Prof. (Dr.) Apurv Raval⁴, Dr. Sarang R. Javkhedkar⁵, Dr. M. Buvana⁶

¹Assistant Professor, Commerce, Faculty of Science and Humanities, SRM Institute of Science and Technology, Vadapalani, Chennai Tamil Nadu, thanigai110490@gmail.com, Thanigar@srmist.edu.in, Orchid Id : 0009-0008-4604-4881

²Assistant Professor, Department of Home Science, Mahila Vidyalaya PG College Lucknow affiliated to University of Lucknow, Mishrsunita@gmail.com

³Associate Professor, Department of Commerce, Christ University, Central Campus, Bengaluru.

⁴Professor and Director Academics and Research, Shreyarth University, Ahmedabad

⁵Assistant Professor, Dr. Ambedkar Institute of Management Studies and Research, Nagpur, sarang_javkhedkar@daims.edu.in, ORCID - 0000-0002-2746-6236

⁶Associate Professor, Computer Science and Engineering, Vel Tech Multi Tech, Dr. Rangarajan, Dr. Sakunthala Engineering College, Avadi, Chennai, Tamil Nadu

ABSTRACT: The rapid, largely involuntary shift toward hybrid work arrangements has reopened a long-standing question in organizational behaviour research: whether leadership style meaningfully shapes employee engagement and, through it, workplace productivity, under conditions where face-to-face supervision is no longer the default mode of leader-follower interaction. This paper reviews the theoretical and empirical literature connecting leadership style, employee engagement, and productivity, synthesizing foundational engagement theory and the Job Demands-Resources model with the transformational-transactional leadership tradition and the more recent e-leadership and virtual-team leadership literature that emerged specifically to address technology-mediated supervision. The review further incorporates large-sample empirical evidence on remote and hybrid work productivity, including field-experimental and personnel-analytics studies conducted before and during the COVID-19 pandemic, to evaluate whether the engagement-productivity relationship established in traditional workplace settings generalizes to hybrid contexts. Particular attention is given to how transformational leadership behaviours, idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, translate, attenuate, or require adaptation when delivered primarily through digital communication channels rather than physical co-presence. Comparative tables map leadership style dimensions onto their engagement mechanism, contrast documented in-person versus hybrid-context leadership effectiveness evidence, and set specific hybrid-work productivity moderators against the leadership practices the reviewed literature associates with addressing each. The paper concludes that transformational leadership's engagement-building effect persists in hybrid contexts but operates through a narrower and more deliberately exercised behavioural repertoire than in co-located settings, and identifies the measurement of engagement itself under hybrid conditions as a central future research priority.

1. INTRODUCTION

Employee engagement, defined by Kahn's foundational conceptualization as the harnessing of organization members' selves to their work roles, such that people employ and express themselves physically, cognitively, and emotionally during role performance, has occupied a central position in organizational behaviour research for more than three decades, and the construct's practical significance has only intensified as hybrid work arrangements have removed the physical co-presence that traditional engagement-building practices historically assumed [1]. Kahn's original formulation identified three psychological conditions, meaningfulness, safety, and availability, as jointly necessary for an employee to engage fully with their work, a framework that presupposes ongoing, often informal, interpersonal interaction between employees and their leaders and colleagues, precisely the kind of interaction hybrid work arrangements structurally reduce [1]. Schaufeli and Bakker's subsequent development of engagement as a positive, fulfilling, work-related state of mind characterized by vigour, dedication, and absorption operationalized Kahn's conceptual framework into the measurement instrument, the Utrecht Work Engagement Scale, that underlies the large majority of the empirical engagement literature reviewed in this paper [2].

Bakker and Demerouti's Job Demands-Resources (JD-R) model provided the dominant theoretical mechanism explaining how organizational and leadership factors translate into engagement specifically, proposing that job resources, including supportive leadership, autonomy, and performance feedback, initiate a motivational process that fosters engagement and, through engagement, positive organizational outcomes including productivity, while job demands that exceed available resources instead initiate a health-impairment process leading toward burnout and reduced performance [3]. This dual-process structure directly frames the central question this paper addresses: hybrid work arrangements plausibly alter both the demands employees face, isolation, blurred work-home boundaries, and communication overhead, and the resources available to offset those demands, including the specific leadership behaviours a supervisor can practically deliver through digital channels, meaning that the JD-R model's predicted engagement and productivity outcomes cannot simply be assumed to transfer unchanged from co-located to hybrid work settings [3].

Bass's transformational leadership theory, and its subsequent formalization within the full-range leadership model distinguishing transformational, transactional, and laissez-faire leadership styles, identified four specific transformational behaviours, idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, that Judge and Piccolo's meta-analytic review confirmed as significantly and more strongly associated with follower motivation, satisfaction, and performance outcomes than transactional leadership's contingent-reward and management-by-exception behaviours across the accumulated empirical literature available at the time of their review [4], [5]. Breevaart et al.'s daily diary study extended this transformational leadership evidence directly to engagement specifically, finding that daily fluctuations in leaders' transformational behaviour predicted corresponding daily fluctuations in followers' work engagement, with this within-person relationship holding even after controlling for stable, between-person differences in overall leadership style, evidence that transformational leadership's engagement-building effect operates through leaders' immediate, situational behaviour rather than through a fixed leadership trait alone [6]. Tims, Bakker, and Xanthopoulou's related daily-level study similarly found that transformational leadership predicted daily follower engagement, and specifically identified optimism as a partial mediating mechanism, evidence directly relevant to understanding which specific psychological process transformational leadership activates [7].

The emergence of predominantly digital leader-follower interaction under hybrid and remote work arrangements motivated an earlier, pre-pandemic e-leadership literature that anticipated many of the questions the post-2020 hybrid work shift subsequently made urgent at scale. Avolio, Kahai, and Dodge's foundational e-leadership framework argued that leadership exercised through electronic communication media constitutes a genuinely distinct phenomenon requiring dedicated theoretical treatment rather than a straightforward extension of face-to-face leadership theory, since the communication medium itself shapes which leadership behaviours can be practically enacted and how followers interpret them [8]. Purvanova and Bono's direct empirical comparison of transformational leadership's effects in face-to-face versus virtual team contexts found that transformational leadership exerted an even stronger positive effect on follower performance in virtual teams than in face-to-face teams, a counterintuitive finding the authors attribute to transformational leadership's particular value in compensating for the reduced informal communication and relational cues that virtual, digitally mediated teamwork otherwise lacks [9].

This paper reviews the engagement, JD-R, transformational leadership, and e-leadership literatures alongside the large-sample empirical evidence on remote and hybrid work productivity, before examining how these strands jointly inform leadership practice specifically for the hybrid work era.

Research Objectives

- To review the theoretical foundations of employee engagement and the Job Demands-Resources model as applied to leadership research.
- To synthesize the transformational-transactional leadership literature and its documented relationship with employee engagement.
- To examine the e-leadership and virtual-team leadership literature addressing digitally mediated supervision specifically.
- To evaluate empirical evidence on remote and hybrid work productivity and its relationship to engagement-building leadership practice.
- To identify future research priorities for measuring and supporting engagement under hybrid work conditions.

2. LITERATURE REVIEW

2.1 Employee Engagement: Theoretical Foundations

Kahn's original engagement framework, developed through qualitative fieldwork rather than survey instrumentation, established engagement as a variable state rather than a fixed individual trait, one that fluctuates as psychological meaningfulness, safety, and availability fluctuate across different work situations and relationships, a variability-centred framing directly consistent with the daily-diary evidence Breevaart et al., and Tims, Bakker, and Xanthopoulou later documented for leadership's engagement effects specifically [1], [6], [7]. Rich, Lepine, and Crawford's empirical test of engagement's antecedents and consequences found that engagement, measured through physical, emotional, and cognitive dimensions consistent with Kahn's original three-dimensional framing, significantly predicted both task performance and organizational citizenship behaviour, with engagement's predictive power exceeding that of job satisfaction and intrinsic motivation measured separately, evidence that engagement functions as a distinct and practically consequential construct rather than a redundant relabeling of existing motivation constructs [10]. Christian, Garza, and Slaughter's meta-analytic review of the broader engagement literature confirmed this performance relationship at a considerably larger evidentiary scale, finding a consistent, moderate-to-strong positive relationship between engagement and both task and contextual performance across the accumulated studies reviewed, while also identifying job characteristics and leadership as among the strongest documented antecedents of engagement itself [11].

2.2 The Job Demands-Resources Model and Leadership as a Resource

Bakker and Demerouti's JD-R model's central theoretical contribution was demonstrating that job resources, rather than the mere absence of job demands, are what specifically predict engagement, since resources satisfy basic psychological needs, provide intrinsic motivational value, and buffer the impact of job demands, a formulation that positions leadership behaviour as one among several manipulable organizational resources rather than as an independent, separately theorized influence on engagement [3]. Harter, Schmidt, and Hayes's large-sample, business-unit-level meta-analysis provided direct corroborating evidence for this resource-engagement-outcome chain at an organizational rather than individual level, finding that business units with higher aggregate employee engagement and satisfaction exhibited significantly better business outcomes, including productivity, customer satisfaction, and profitability, across a very large multi-organization sample, evidence that the engagement-productivity relationship holds at a practically consequential organizational scale rather than being a laboratory or single-firm artifact [12].

2.3 Transformational and Transactional Leadership

Bass's full-range leadership model distinguished transformational leadership, which motivates followers by appealing to higher-order needs and shared organizational vision, from transactional leadership, which motivates followers through contingent reward and corrective exchange, and from laissez-faire leadership, characterized by an absence of active leadership intervention altogether [4]. Judge and Piccolo's meta-analytic synthesis of this full-range model found that transformational leadership's

individual components, particularly idealized influence and inspirational motivation, were more strongly associated with follower job satisfaction, leader effectiveness ratings, and follower performance than transactional leadership's contingent-reward dimension, though the authors specifically noted that contingent reward, transactional leadership's most constructive dimension, still predicted meaningfully positive outcomes, cautioning against dismissing transactional leadership entirely in favour of transformational leadership alone [5]. Breevaart et al.'s within-person daily diary evidence extended this comparative finding to engagement specifically at a finer temporal grain, finding that both transformational leadership and contingent reward, a transactional leadership behaviour, predicted daily engagement, while laissez-faire leadership and active management-by-exception, a more punitive transactional behaviour, predicted daily disengagement, evidence that the transformational-transactional distinction, while broadly informative, understates the importance of examining specific constituent leadership behaviours individually [6].

2.4 E-Leadership and Virtual Team Leadership

Avolio, Kahai, and Dodge's e-leadership framework argued that electronic communication media alter leadership's fundamental social-influence process by removing or degrading many of the nonverbal, paraverbal, and contextual cues face-to-face leadership relies upon, requiring leaders to develop compensating communication strategies specifically adapted to the constraints and affordances of digital media rather than simply transferring face-to-face leadership habits unchanged into a virtual context [8]. Purvanova and Bono's comparative empirical study found that transformational leadership's positive effect on follower performance was significantly stronger in virtual teams than in face-to-face teams, a finding the authors interpret through the lens of transformational leadership's capacity to provide the vision, meaning, and individualized attention that virtual team members, lacking the informal relational cues face-to-face colleagues receive incidentally, are more acutely dependent upon their leader to supply deliberately [9]. Contreras, Baykal, and Abid's review of e-leadership specifically during the COVID-19-driven shift to widespread teleworking found that leaders who deliberately increased the frequency and structure of their digital communication, rather than merely replicating pre-pandemic communication patterns through new channels, more successfully sustained follower engagement and performance during the transition, evidence directly relevant to understanding what leadership adaptation, rather than leadership style alone, contributes to sustained engagement under hybrid and remote conditions [13].

2.5 Remote and Hybrid Work Productivity Evidence

Bloom, Liang, Roberts, and Ying's landmark randomized field experiment, conducted with a Chinese travel-agency call centre before the COVID-19 pandemic made remote work widespread, found that employees randomly assigned to work from home for a nine-month period exhibited a 13 percent performance increase relative to office-based colleagues, an effect the authors attribute to a combination of a quieter working environment and fewer breaks and sick days, while also finding that employees expressing a prior preference for home-based work experienced a considerably larger performance improvement than employees without such a preference, an early indication that remote and hybrid work's productivity effects are not uniform across the workforce [14]. Gibbs, Mengel, and Siemroth's subsequent personnel-analytics study of a large information-technology firm during the pandemic-driven shift to mandatory remote work found a more qualified pattern, that total hours worked increased under remote work but output did not increase proportionately, implying a decline in productivity per hour, an effect the authors attribute partly to increased time spent in coordination meetings and communication overhead under remote conditions, a finding that complicates a straightforwardly positive reading of the earlier Bloom et al. results and underscores that remote and hybrid work's productivity effects depend substantially on job type and coordination requirements [15]. Choudhury, Foroughi, and Larson's study of a "work-from-anywhere" policy implemented at a U.S. federal patent office found a further qualification, that geographic flexibility increased employee productivity, but that this productivity gain depended on employees having previously accumulated sufficient face-to-face relationship capital with colleagues and supervisors, suggesting that remote and hybrid work's productivity benefits may be conditional on a foundation of relationship quality that, per the leadership literature reviewed above, engaged, transformational leadership is specifically positioned to help build and sustain [16].

2.6 Telecommuting Meta-Analytic Evidence and Boundary Conditions

Gajendran and Harrison's earlier meta-analysis of telecommuting's psychological and relational consequences, conducted well before the pandemic-driven scale-up of remote work, found that telecommuting was associated with modestly higher job satisfaction, lower work-family conflict, and, notably, higher supervisor-rated performance, while also finding that

telecommuting's positive relationship with perceived career prospects and relationships with coworkers turned negative once telecommuting intensity exceeded a moderate threshold, evidence for a curvilinear rather than uniformly positive relationship between remote-work intensity and several outcomes directly relevant to engagement [17]. Allen, Golden, and Shockley's subsequent, more comprehensive review of telecommuting's effectiveness reached a broadly consistent, cautious conclusion, finding that the accumulated scientific evidence supported modest positive effects of telecommuting on several outcomes but identified considerable heterogeneity across studies attributable to differences in telecommuting intensity, job autonomy, and, importantly, the quality of the supervisor-employee relationship, directly reinforcing this paper's central argument that leadership quality functions as a critical moderating condition rather than an independent, additive factor in remote and hybrid work outcomes [18]. Golden and Veiga's earlier study of superior-subordinate relationship quality among virtual workers specifically found that the quality of this relationship significantly predicted virtual workers' organizational commitment, job satisfaction, and performance, and that this relationship-quality effect was, if anything, more consequential for high-intensity telecommuters than for employees telecommuting only occasionally, direct evidence that leadership relationship quality becomes more, not less, important as physical co-presence declines [19]. Wang, Liu, Qian, and Parker's work-design analysis of remote working effectiveness during the pandemic synthesized this boundary-condition evidence into a practical framework, arguing that effective remote work management requires deliberate attention to four specific job-design and leadership levers, autonomy support, communication structure, social and emotional support, and workload/boundary management, a framework that maps closely onto the transformational leadership dimensions Bass originally formalized and provides a direct bridge between the leadership-style literature reviewed in Section 2.3 and the hybrid-work productivity evidence reviewed in this section [4], [20].

2.7 Research Gap

While the transformational leadership and engagement literature reviewed in Sections 2.1 through 2.3 has established a robust, well-replicated relationship in predominantly co-located work contexts, and the e-leadership literature reviewed in Section 2.4 has independently established that transformational leadership's effect may persist or even strengthen in virtual settings, comparatively few studies directly test the full JD-R-mediated engagement-productivity pathway using hybrid-work-specific samples that combine both in-person and remote interaction within the same working arrangement, the specific configuration that has become dominant since 2020 rather than the purely remote or purely co-located arrangements most of the foundational literature examined [3], [9], [15], [17]. This review addresses this gap by organizing the reviewed evidence within a comparative framework spanning leadership dimension, engagement mechanism, and hybrid-context productivity moderator.

3. METHODOLOGY

This study adopts a qualitative, descriptive, and comparative research design synthesizing peer-reviewed organizational behaviour, leadership, and labour economics literature addressing employee engagement, leadership style, and remote/hybrid work productivity. Reviewed studies were compared along four axes: theoretical framework applied (engagement theory, JD-R model, or full-range leadership theory); work context examined (co-located, purely remote, or hybrid); evidence type (survey/meta-analytic, daily-diary, or field-experimental/personnel-analytics); and whether the study addresses leadership style, productivity outcomes, or both jointly.

4. RESULTS AND DISCUSSION

4.1 Leadership Style Dimensions Mapped to Engagement Mechanism

Table 1. Leadership Style Dimensions and Their Documented Engagement Mechanism

Leadership Dimension	Behavioural Description	Engagement Mechanism Activated	Supporting Evidence
Idealized influence	Leader modeled as a trusted, principled role model	Psychological safety and meaningfulness (Kahn's framework)	Bass [4]; Kahn [1]
Inspirational motivation	Articulating a compelling shared vision and high expectations	Vigour and dedication (motivational resource, per JD-R)	Judge & Piccolo [5]; Bakker & Demerouti [3]

Intellectual stimulation	Encouraging creative problem-solving and challenging assumptions	Cognitive absorption; perceived job resource	Bass [4]; Christian, Garza & Slaughter [11]
Individualized consideration	Attending to individual follower needs and development	Availability and psychological safety; relationship quality	Kahn [1]; Golden & Veiga [19]
Contingent reward (transactional)	Clear exchange of effort for recognized reward	Modest engagement gain via resource provision	Breevaart et al. [6]
Laissez-faire / passive management-by-exception	Absence of active leadership intervention	Disengagement; resource depletion	Breevaart et al. [6]
Structured digital communication (e-leadership)	Deliberate, frequent, and structured virtual interaction	Compensates for lost informal/nonverbal engagement cues	Avolio, Kahai & Dodge [8]; Contreras, Baykal & Abid [13]

4.2 In-Person Versus Hybrid-Context Leadership Effectiveness Evidence

Table 2. Leadership Effectiveness Evidence Across In-Person and Hybrid/Remote Contexts

Work Context	Study	Key Finding on Leadership/Engagement	Productivity-Relevant Outcome
Predominantly in-person	Harter, Schmidt & Hayes [12]	Business units with higher engagement show better outcomes	Higher productivity, customer satisfaction, profitability
Face-to-face vs. virtual teams (direct comparison)	Purvanova & Bono [9]	Transformational leadership effect on performance stronger in virtual teams	Higher follower performance in virtual condition
Purely remote (pre-pandemic field experiment)	Bloom, Liang, Roberts & Ying [14]	Home-based work improved performance, especially for employees preferring it	+13% performance increase
Purely remote (pandemic personnel data)	Gibbs, Mengel & Siemroth [15]	Hours increased but output did not rise proportionately; coordination overhead grew	Decline in productivity per hour
Flexible/hybrid ("work from anywhere")	Choudhury, Foroughi & Larson [16]	Productivity gains conditional on prior relationship capital	Productivity increase contingent on relationship quality
Telecommuting (meta-analytic, mixed intensity)	Gajendran & Harrison [17]	Curvilinear relationship; benefits reverse at high telecommuting intensity	Higher supervisor-rated performance at moderate intensity

4.3 Hybrid-Work Productivity Moderators and Corresponding Leadership Practices

Table 3. Hybrid-Work Productivity Moderators and Corresponding Leadership Practices

Productivity Moderator	Nature of the Challenge	Corresponding Leadership Practice	Supporting Evidence
Coordination/communication overhead	Increased meeting time under remote conditions reduces output per hour	Structured, intentional communication rather than replicated in-person habits	Gibbs, Mengel & Siemroth [15]; Contreras, Baykal & Abid [13]

Relationship capital depreciation	Productivity gains from flexibility depend on pre-existing relationship quality	Individualized consideration; sustained relationship investment	Choudhury, Foroughi & Larson [16]; Golden & Veiga [19]
Telecommuting intensity threshold	Benefits reverse once remote intensity exceeds a moderate level	Hybrid scheduling balancing autonomy with co-presence	Gajendran & Harrison [17]
Loss of informal/nonverbal engagement cues	Digital channels strip cues face-to-face leadership relies upon	Deliberate compensating communication strategy (e-leadership)	Avolio, Kahai & Dodge [8]; Purvanova & Bono [9]
Workload/boundary blurring	Remote work blurs work-home boundaries, risking demand-resource imbalance	Explicit boundary and workload management support	Wang, Liu, Qian & Parker [20]; Bakker & Demerouti [3]
Heterogeneous employee preference for remote work	Productivity effects vary by individual preference for remote arrangements	Individualized, preference-sensitive scheduling flexibility	Bloom, Liang, Roberts & Ying [14]

DISCUSSION

Taken together, the evidence in Tables 1 through 3 indicates that transformational leadership's engagement-building effect, well established in co-located settings by Bass, Judge and Piccolo, and Breevaart et al., persists and in some respects strengthens under hybrid and virtual conditions, but does so only when leaders deliberately adapt their behavioural repertoire to the communication constraints digital channels impose, rather than assuming face-to-face leadership habits transfer automatically [4], [5], [6], [8], [9]. Table 2's context-comparison evidence indicates that the productivity effects of remote and hybrid arrangements are considerably more heterogeneous than early, largely positive findings such as Bloom, Liang, Roberts, and Ying's field experiment suggested, with Gibbs, Mengel, and Siemroth's later, larger-scale personnel-analytics evidence documenting a coordination-overhead cost that can offset or reverse naive productivity gains, a heterogeneity that Table 3 reframes as a set of specific, addressable moderators rather than an unresolvable uncertainty [14], [15]. Read against Table 1's mechanism mapping, this reframing suggests a coherent practical implication: individualized consideration and structured digital communication, the transformational and e-leadership behaviours most directly tied to relationship quality and compensating for lost informal cues, are precisely the practices Table 3 identifies as addressing hybrid work's most consequential productivity moderators, relationship capital depreciation and lost nonverbal engagement cues specifically [1], [9], [16], [19]. This convergence across three independently derived tables supports the paper's central interpretive claim: leadership style does not merely correlate with engagement and productivity under hybrid work as a background factor, but functions as the primary mechanism through which organizations can actively manage the specific structural challenges, coordination overhead, relationship depreciation, and boundary blurring, that hybrid arrangements introduce [3], [15], [20].

CONCLUSION

This paper has reviewed the theoretical and empirical literature connecting leadership style, employee engagement, and workplace productivity, with particular attention to how this relationship operates under hybrid work arrangements. The evidence indicates that transformational leadership's well-established engagement-building effect in co-located work settings persists, and in some documented cases strengthens, in virtual and hybrid contexts, but that this persistence depends on leaders deliberately adapting their communication and relationship-building behaviours to the specific constraints digital channels impose rather than assuming face-to-face leadership practices transfer unchanged. The hybrid and remote work productivity literature reveals considerably more heterogeneity than early, largely positive field-experimental findings suggested, with coordination overhead, relationship-capital depreciation, and telecommuting-intensity thresholds each documented as specific, identifiable moderators of the engagement-productivity relationship. Collectively, this evidence indicates that leadership quality functions as the central mechanism through which organizations can address hybrid work's specific structural challenges, rather than as one input among many whose importance diminishes as physical co-presence declines.

FUTURE WORK

Future research should prioritize daily-diary and longitudinal studies specifically designed for hybrid, rather than purely remote or purely co-located, work arrangements, extending Breevaart et al.'s and Tims, Bakker, and Xanthopoulou's within-person methodology to capture how leadership behaviour and engagement fluctuate across the alternating in-person and remote days

that characterize genuinely hybrid schedules. Further work is needed to directly test the JD-R model's full mediated pathway, from leadership behaviour through job resources to engagement to productivity, using hybrid-work-specific samples, since the foundational JD-R evidence reviewed in this paper was developed predominantly in co-located contexts and the hybrid-work productivity evidence reviewed in Section 2.5 has not yet been systematically integrated with engagement measurement within a single study design. Continued research should also examine whether the relationship-capital depreciation Choudhury, Foroughi, and Larson identified generalizes beyond their federal-patent-office sample, and whether individualized-consideration leadership practices can measurably offset this depreciation over extended hybrid-work tenures. Finally, future work should reassess engagement measurement itself under hybrid conditions, since the Utrecht Work Engagement Scale and related instruments were developed and validated predominantly in co-located work contexts, and it remains an open empirical question whether vigour, dedication, and absorption manifest and are accurately self-reported in the same way when a substantial share of an employee's work occurs outside a shared physical workplace.

REFERENCES

- [1] W. A. Kahn, "Psychological conditions of personal engagement and disengagement at work," *Academy of Management Journal*, vol. 33, no. 4, pp. 692–724, 1990.
- [2] W. B. Schaufeli and A. B. Bakker, "Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study," *Journal of Organizational Behavior*, vol. 25, no. 3, pp. 293–315, 2004.
- [3] A. B. Bakker and E. Demerouti, "The Job Demands-Resources model: State of the art," *Journal of Managerial Psychology*, vol. 22, no. 3, pp. 309–328, 2007.
- [4] B. M. Bass, *Leadership and Performance Beyond Expectations*. New York, NY, USA: Free Press, 1985.
- [5] T. A. Judge and R. F. Piccolo, "Transformational and transactional leadership: A meta-analytic test of their relative validity," *Journal of Applied Psychology*, vol. 89, no. 5, pp. 755–768, 2004.
- [6] K. Breevaart, A. B. Bakker, E. Demerouti, and J. Derks, "Who takes the lead? A multi-source diary study on leadership, work engagement, and job performance," *Journal of Organizational Behavior*, vol. 37, no. 3, pp. 309–325, 2016.
- [7] M. Tims, A. B. Bakker, and D. Xanthopoulou, "Do transformational leaders enhance their followers' daily work engagement?," *The Leadership Quarterly*, vol. 22, no. 1, pp. 121–131, 2011.
- [8] B. J. Avolio, S. Kahai, and G. E. Dodge, "E-leadership: Implications for theory, research, and practice," *The Leadership Quarterly*, vol. 11, no. 4, pp. 615–668, 2000.
- [9] R. K. Purvanova and J. E. Bono, "Transformational leadership in context: Face-to-face and virtual teams," *The Leadership Quarterly*, vol. 20, no. 3, pp. 343–357, 2009.
- [10] B. L. Rich, J. A. Lepine, and E. R. Crawford, "Job engagement: Antecedents and effects on job performance," *Academy of Management Journal*, vol. 53, no. 3, pp. 617–635, 2010.
- [11] M. S. Christian, A. S. Garza, and J. E. Slaughter, "Work engagement: A quantitative review and test of its relations with task and contextual performance," *Personnel Psychology*, vol. 64, no. 1, pp. 89–136, 2011.
- [12] J. K. Harter, F. L. Schmidt, and T. L. Hayes, "Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis," *Journal of Applied Psychology*, vol. 87, no. 2, pp. 268–279, 2002.
- [13] F. Contreras, E. Baykal, and G. Abid, "E-leadership and teleworking in times of COVID-19 and beyond: What we know and where do we go," *Frontiers in Psychology*, vol. 11, 590271, 2020.
- [14] N. Bloom, J. Liang, J. Roberts, and Z. J. Ying, "Does working from home work? Evidence from a Chinese experiment," *Quarterly Journal of Economics*, vol. 130, no. 1, pp. 165–218, 2015.
- [15] M. Gibbs, F. Mengel, and C. Siemroth, "Work from home and productivity: Evidence from personnel and analytics data on information workers," *Journal of Political Economy Microeconomics*, vol. 1, no. 1, pp. 7–41, 2023.
- [16] P. Choudhury, C. Foroughi, and B. Larson, "Work-from-anywhere: The productivity effects of geographic flexibility," *Strategic Management Journal*, vol. 42, no. 4, pp. 655–683, 2021.

- [17] R. S. Gajendran and D. A. Harrison, "The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences," *Journal of Applied Psychology*, vol. 92, no. 6, pp. 1524–1541, 2007.
- [18] T. D. Allen, T. D. Golden, and K. M. Shockley, "How effective is telecommuting? Assessing the status of our scientific findings," *Psychological Science in the Public Interest*, vol. 16, no. 2, pp. 40–68, 2015.
- [19] T. D. Golden and J. F. Veiga, "The impact of superior-subordinate relationships on the commitment, job satisfaction, and performance of virtual workers," *The Leadership Quarterly*, vol. 19, no. 1, pp. 77–88, 2008.
- [20] B. Wang, Y. Liu, J. Qian, and S. K. Parker, "Achieving effective remote working during the COVID-19 pandemic: A work design perspective," *Applied Psychology*, vol. 70, no. 1, pp. 16–59, 2021.