



Dr. Saima Gul<sup>1</sup>, Dr. Mahira Mirza<sup>2</sup>, Saniya Ovais<sup>3</sup> & Salman Shifa<sup>4</sup>

<sup>1</sup>Manager HR, Ayub Teaching Hospital, Medical Teaching Institute Abbottabad, Email: [saima.gul83@gmail.com](mailto:saima.gul83@gmail.com)

<sup>2</sup>Assistant Professor, Bahria University Pakistan. Email: [mahiramirza.bukc@bahria.edu.pk](mailto:mahiramirza.bukc@bahria.edu.pk)

<sup>3</sup>Lecturer, Institute of Health & Business Administration, JSMU, Email: [saniya.ovais@jsmu.edu.pk](mailto:saniya.ovais@jsmu.edu.pk)

<sup>4</sup>PhD Scholar, Department of Educational Training, Islamia University Bahawalpur, Pakistan,

Email: [salman.shifa1@gmail.com](mailto:salman.shifa1@gmail.com)

| KEYWORDS                                                                                                                                                    | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hybrid Work, Employee Engagement, Human Resource Management, Work-Life Balance.                                                                             | The present study examines the association between hybrid working and employee engagement and discusses the implications for human resource management (HRM) in hybrid contexts. A Monte Carlo simulation study was conducted in which a dataset of N = 240 simulated hybrid workers from three sectors (information technology, financial services, and professional services) was generated using parameters calibrated to effect sizes reported in the 2024–2026 hybrid-work literature; no real respondents were surveyed. The simulated variables represent employee engagement, work-life balance, leadership support, communication quality, and technostress. The hypotheses were tested using descriptive statistics, Pearson correlation, multiple regression analysis, and one-way analysis of variance (ANOVA) with Tukey HSD post-hoc comparisons. In the simulated data, leadership support was the strongest positive predictor of employee engagement ( $\beta = .34, p < .001$ ), followed by work-life balance ( $\beta = .29, p < .001$ ), while technostress was a significant negative predictor ( $\beta = -.21, p < .01$ ). Engagement was highest in the balanced hybrid group (2–3 office days per week) and significantly higher than in the remote-dominant and office-dominant groups. The simulated results are consistent with previous research reporting that global employee engagement has fallen to its lowest level since 2020 (Gallup, 2026) and with arguments for a more strategic, data-driven HRM role in hybrid workplaces (Nagori & Lawton, 2026), but they are illustrative only and require confirmation with primary data. HRM policy implications and directions for future research are discussed as hypotheses to be tested. |
| <b>ARTICLE HISTORY</b><br>Date of Submission:<br><b>30-06-2026</b><br>Date of Acceptance:<br><b>02-08-2026</b><br>Date of Publication:<br><b>08-08-2026</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Corresponding Author                                                                                                                                        | Dr. Saima Gul                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Email:                                                                                                                                                      | <a href="mailto:saima.gul83@gmail.com">saima.gul83@gmail.com</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| DOI                                                                                                                                                         | <a href="https://doi.org/10.59075/jssd.v5i6.280">https://doi.org/10.59075/jssd.v5i6.280</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Volume/Issue                                                                                                                                                | 5(6), 2026, 124-134                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |



2026 Journal of Social Sciences Development

## Introduction

Hybrid work, where workers split their time between the office and remote working, has become a reality in the modern workplace rather than something that was considered during COVID-19. Engagement data from around the world indicate that this shift has been accompanied by an alarming trend: employee engagement in the world has dropped for the second year in a row in 2025, back to its 2020 levels, and disengagement has been estimated to cost the global workforce around \$10 trillion in lost productivity (Gallup, 2026). Simultaneously, organisations are still testing and refining the best practices for remote and onsite working, and human resource management (HRM) professionals are now more likely to be the designers of policies aimed at supporting engagement, wellbeing, and performance in distributed teams (Nagori & Lawton, 2026; Naqshbandi et al., 2024).

The concept of hybrid work represents a shift not just in locations but in the actual dynamic of the demand-resource balance that has historically driven employee engagement (Vartiainen & Vanharanta, 2024). While co-located work created resources like managerial visibility, informal support and definite temporal boundaries, hybrid work needs organizations to make an effort to create and provide these resources. In the information technology industry, where the use of the hybrid model has been the most widespread, recent quantitative studies have yielded mixed results: some researchers report that flexibility and autonomy have significant positive effects on engagement and productivity (Rajeswari & Venugopal, 2024; Reddy & Dasari, 2025), while others maintain that the quality of communication, leadership, and boundary management have moderating or even negative effects (Appel-Meulenbroek et al., 2022).

The present study is motivated by this lack of consistency in the literature and by the fact that the number of engagements has not been high in the world for many years. This simulation study examines which organizational and psychological elements — work-life balance, leadership support, communication quality, and technostress — are most strongly associated with employee engagement in hybrid contexts, and whether engagement differs by hybrid work schedule. Through this, the study illustrates an analytic approach that, once applied to primary data, could give HRM practitioners an evidence-based foundation for redesigning engagement strategies for distributed work environments. Although many companies have switched to a hybrid work model, many are still using engagement techniques that are built for a fully co-located workforce. This could be one reason why there is a recorded decline in global engagement (Gallup, 2026). Empirical and quantitative evidence is required to know upon which factors HRM should pay attention to with respect to hybrids.

## Literature Review

### Theoretical Framework

The Job Demands-Resources (JD-R) model, which outlines engagement and the balance between the demands of the job (workload, role ambiguity, technostress) and resources of the job

(autonomy, support, feedback), is adopted in this study (Bakker & Demerouti, 2008). Hybrid work is changing this balance, as the resources that are provided structurally are getting removed, while new demands are coming in like technostress and boundary collapse (Vartiainen & Vanharanta, 2024; Bakker & Demerouti, 2017). Whereas, Kahn's engagement framework adds a critical aspect of how psychological conditions must be present for engagement, namely meaningfulness, psychological safety, and availability, hybrid arrangements can pose threats to all three if they render employees invisible to decision makers or deplete them of informal relational cues (Nagori & Lawton, 2026; Christian, Garza, & Slaughter, 2011).

### **Hybrid Work and Employee Engagement**

The results of empirical studies on hybrid working and engagement are still inconclusive. In their study of 345 IT professionals, Rajeswari and Venugopal (2024) observed a positive relationship between hybrid work models and employee productivity and engagement as a significant mediator in this relationship, a pattern echoed in subsequent hybrid-workplace research (Nagshbandi et al., 2024). In a similar finding, Reddy and Dasari (2025) found that, when supported organizational structures exist, hybrid arrangements were associated with higher levels of engagement and performance among IT workers. However, Tabassum et al. (2025) in their study on 452 workers from Delhi-NCR found that the association between hybrid working and employee engagement operated mainly through employee voice, supervisor support, and job autonomy, and not just flexibility alone, suggesting that while flexibility is required, it is not enough.

### **The Role of Leadership and Communication**

Leadership behaviour is a key factor in the recent studies and it appears that leadership behaviour, rather than flexibility of location, is what is most strongly associated with engagement. In a case study conducted in a South African IT firm, it was discovered that although flexibility was associated with higher engagement, organizational support was linked to greater commitment and satisfaction for hybrid workers (Charles et al., 2025; Allen, Grelle, Lazarus, Popp, & Gutierrez, 2024). A review of seven studies collated (78 studies) found that organisational culture and leadership is one of five key factors, along with workspace and work-time flexibility, strategic task allocation, collaboration tools and training and support, that are associated with engagement and wellbeing in hybrid contexts (Nagori & Lawton, 2026).

### **Technostress and Digital Wellbeing**

The same study also points to technostress, or the stress caused by around-the-clock digital communication and the constant presence of communication tools, as a potential danger to engagement in hybrid work arrangements (Curcuruto, Williams, Brondino, & Bazzoli, 2023). Collaboration technology can turn from a job resource into a job demand; companies that do not set expectations for clear communication may squander the collaboration flexibility they sought to achieve (Nagori & Lawton, 2026; Ugwu, Enwereuzor, & Mazei, 2023).

## Declining Global Engagement

To put these organisational level findings in context, Gallup's latest data on engagement for employees globally indicate that only 20% were engaged in their jobs in 2025, 64% were not engaged, and 16% were actively disengaged, with global engagement falling for the second year in a row (Gallup, 2026). Interestingly, this has been most significant in the realm of managers, who are the most likely to make the connection between a hybrid work policy and a positive employee work experience (Gallup, 2026). This trend further highlights the need for understanding the key factors of hybrid work on which HRM can intervene.

## Research Hypotheses

H1: Work–life balance is positively associated with employee engagement.

H2: Leadership support is positively associated with employee engagement.

H3: Communication quality is positively associated with employee engagement.

H4: Technostress is negatively associated with employee engagement.

H5: Employee engagement differs significantly across hybrid work schedule groups.

## Methodology

The study used a Monte Carlo simulation design to illustrate a cross-sectional, explanatory quantitative analysis of the kind used in recent hybrid-work studies (Rajeswari & Venugopal, 2024; Tabassum et al., 2025). No data were collected from real respondents and no human participants were involved; informed consent and ethical approval were therefore not applicable.

The simulated population represented full-time workers with a genuine hybrid arrangement, defined as at least one remote day and at least one on-site day in a five-day working week, from information technology, financial services, and professional services organisations. A simulated sample of  $N = 240$  cases was generated, a size chosen to be comparable to previous survey studies of hybrid work, which ranged from around 100 to 450 respondents (Nagori & Lawton, 2026; Reddy & Dasari, 2025; Tabassum et al., 2025; Appel-Meulenbroek et al., 2022).

The simulated variables correspond to a questionnaire of six sections that a primary-data study would administer: (a) demographic and work-arrangement items, (b) a 9-item Employee Engagement scale, (c) a 5-item Work–Life Balance scale, (d) a 5-item Leadership Support scale, (e) a 5-item Communication Quality scale, and (f) a 5-item Technostress scale. All scale items are treated as 5-point Likert items (1 = strongly disagree, 5 = strongly agree), and scale scores are the mean of the items (range 1–5); no recoding to any other metric was applied. Perceived productivity was not analysed in this study and was removed from the design. Internal consistency was specified to exceed the usual level of Cronbach's  $\alpha \geq .70$  for each scale.

Because the data are simulated, no instruments were administered; the following are the instruments on which the simulated variables are modelled. Employee engagement corresponds to the nine-item Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006; e.g., "At my work, I feel bursting with energy"), rescored here on a 1–5 agreement format rather than the original 0–6 frequency format. Work–life balance corresponds to the work–life balance measure of Brough et al. (2014), leadership support to perceived supervisor support (Eisenberger et al., 2002), communication quality to the Communication Satisfaction Questionnaire (Downs & Hazen, 1977), and technostress to the technostress creators scale (Ragu-Nathan et al., 2008). Any item reduction, rewording for hybrid work, or change of response format relative to these sources must be documented in a primary–data study, and construct validity (confirmatory factor analysis, composite reliability, average variance extracted, and discriminant validity) must be reported in addition to Cronbach's alpha. These validity checks were not conducted here because the data are simulated. Respondents' most common weekly schedule was simulated and collapsed into three groups for analysis. So that every case is genuinely hybrid, the groups were defined for a five-day working week as remote-dominant (1 office day per week), balanced hybrid (2–3 office days per week), and office-dominant (4 office days per week); fully remote (0 office days) and fully on-site (5 office days) schedules fall outside the target population.

Descriptive statistics (means, standard deviations), Pearson product-moment correlation to test bivariate relationships, one-way analysis of variance (ANOVA) with Tukey HSD post-hoc comparisons to compare engagement between schedule groups, and multiple linear regression to determine the relative predictive ability of work–life balance, leadership support, communication quality and technostress for employee engagement were used to analyse the data. A  $p < .05$  was considered statistically significant. Multicollinearity was assessed with variance inflation factors (VIF) and tolerance. Residual normality, linearity, and homoscedasticity for the regression, and Levene's test for the ANOVA, require case-level data and should be reported in any primary–data study.

Because the dataset is simulated, all coefficients below are illustrative and must not be interpreted as empirical findings. The dataset was generated with a Monte Carlo procedure calibrated to effect sizes and patterns reported in the 2024–2026 hybrid-work literature. The simulation procedure and random seed can be provided by the corresponding author on request. Any researcher adapting this workflow for scientific submission must replace the dataset with primary data and rerun every analysis.

## Results

*Table 1: Characteristics of the Simulated Sample (N = 240)*

| Characteristic | Category                       | n   | %    |
|----------------|--------------------------------|-----|------|
| Gender         | Male                           | 126 | 52.5 |
|                | Female                         | 108 | 45.0 |
|                | Non-binary / prefer not to say | 6   | 2.5  |

|                       |                                   |     |      |
|-----------------------|-----------------------------------|-----|------|
| Age                   | 21–30 years                       | 74  | 30.8 |
|                       | 31–40 years                       | 96  | 40.0 |
|                       | 41–50 years                       | 52  | 21.7 |
|                       | Over 50 years                     | 18  | 7.5  |
| Organizational tenure | Less than 2 years                 | 58  | 24.2 |
|                       | 2–5 years                         | 101 | 42.1 |
|                       | More than 5 years                 | 81  | 33.7 |
| Hybrid schedule       | Remote-dominant (1 office day)    | 62  | 25.8 |
|                       | Balanced hybrid (2–3 office days) | 118 | 49.2 |
|                       | Office-dominant (4 office days)   | 60  | 25.0 |

The simulated sample was reasonably balanced by gender and skewed toward early- to mid-career knowledge-work employees, mirroring previous IT-sector hybrid work studies that reported a hybrid-eligible knowledge-work employees profile is skewed toward younger employees (Reddy & Dasari, 2025). Approximately half of the simulated cases (49.2%) followed a balanced hybrid schedule of 2–3 office days per week. This was the most common arrangement and served as the most relevant comparison group for subsequent analysis.

*Table 2: Descriptive Statistics for Study Variables*

| Variable              | M    | SD   | Min  | Max  | $\alpha$ |
|-----------------------|------|------|------|------|----------|
| Employee Engagement   | 3.42 | 0.68 | 1.44 | 5.00 | .87      |
| Work–Life Balance     | 3.55 | 0.74 | 1.20 | 5.00 | .82      |
| Leadership Support    | 3.38 | 0.79 | 1.00 | 5.00 | .85      |
| Communication Quality | 3.47 | 0.71 | 1.40 | 5.00 | .80      |
| Technostress          | 2.86 | 0.83 | 1.00 | 5.00 | .78      |

The average engagement score is moderately high ( $M = 3.42$ ,  $SD = 0.68$ ; observed range 1.44–5.00 on the 1–5 scale), broadly consistent with Gallup (2026), who found that only a minority of workers in the world are engaged, and with hybrid-sector survey findings reporting similarly modest overall engagement levels (Siddika, 2025). Technostress received the lowest mean score (slightly below the scale midpoint of 3.00) and the highest SD, indicating that digital workload can be experienced very differently by employees across the sample; work–life balance and communication quality were rated most favourably among the predictors. Reliabilities of all scales met the standard of  $\alpha \geq .70$ .

*Table 3: Pearson Correlation Matrix Among Study Variables*

| Variable                 | 1     | 2     | 3     | 4 | 5 |
|--------------------------|-------|-------|-------|---|---|
| 1. Engagement            | —     |       |       |   |   |
| 2. Work–Life Balance     | .46** | —     |       |   |   |
| 3. Leadership Support    | .51** | .33** | —     |   |   |
| 4. Communication Quality | .38** | .29** | .41** | — |   |

|                        |               |               |               |               |          |
|------------------------|---------------|---------------|---------------|---------------|----------|
| <b>5. Technostress</b> | <b>-.34**</b> | <b>-.40**</b> | <b>-.22**</b> | <b>-.26**</b> | <b>—</b> |
|------------------------|---------------|---------------|---------------|---------------|----------|

*Note. \*\*p < .01 (two-tailed).*

At the bivariate level, the simulated data were consistent with H1–H4. Leadership support was the most positively correlated with engagement ( $r = .51$ ), followed by work–life balance ( $r = .46$ ) and communication quality ( $r = .38$ ). Technostress was negatively correlated with engagement ( $r = -.34$ ) and, importantly, most strongly, and negatively, with work–life balance ( $r = -.40$ ), a moderate association consistent with digital overload blurring work–life boundaries. Multicollinearity was assessed using VIF and tolerance computed from the predictor intercorrelations in Table 3: VIF values ranged from 1.23 to 1.30 (tolerance .77 to .82), well below the common cut-offs of 5 or 10, and no predictor intercorrelation exceeded .60 in absolute value.

*Table 4: Multiple Regression Analysis Predicting Employee Engagement*

| Predictor             | B     | SE   | $\beta$ | t     | p      |
|-----------------------|-------|------|---------|-------|--------|
| (Constant)            | 1.02  | 0.21 | —       | 4.86  | < .001 |
| Work–Life Balance     | 0.27  | 0.06 | .29     | 4.50  | < .001 |
| Leadership Support    | 0.29  | 0.05 | .34     | 5.80  | < .001 |
| Communication Quality | 0.14  | 0.06 | .15     | 2.33  | .021   |
| Technostress          | –0.17 | 0.05 | –.21    | –3.40 | < .01  |

*Note.  $R^2 = .43$ , Adjusted  $R^2 = .42$ ,  $F(4, 235) = 44.18$ ,  $p < .001$ .*

In the simulated data, the overall model was statistically significant and explained 43% of the variance in employee engagement ( $R^2 = .43$ ; adjusted  $R^2 = .42$ ), which is substantial for an organisational survey. The results are consistent with H1 and H2, with leadership support the strongest predictor ( $\beta = .34$ ) followed by work–life balance ( $\beta = .29$ ). Communication quality was a significant but weaker predictor ( $\beta = .15$ ), consistent with H3, and technostress was a significant negative predictor ( $\beta = -.21$ ), consistent with H4. These associations suggest that providing communication tools may be linked to only moderate differences in engagement, whereas managerial behaviour and boundary–protective policies may matter more, which is in line with Nagori and Lawton (2026), who proposed that several factors act together. Residual normality, linearity, and homoscedasticity require case-level data and are not reported for the simulated data.

*Table 5: One-Way ANOVA: Employee Engagement by Hybrid Work Schedule*

| Schedule Group                                    | n   | M    | SD   |
|---------------------------------------------------|-----|------|------|
| Remote-dominant                                   | 62  | 3.21 | 0.71 |
| Balanced hybrid                                   | 118 | 3.61 | 0.61 |
| Office-dominant                                   | 60  | 3.28 | 0.70 |
| $F(2, 237) = 9.87$ , $p < .001$ , $\eta^2 = .077$ |     |      |      |

Engagement differed significantly across the hybrid schedule groups,  $F(2, 237) = 9.87, p < .001, \eta^2 = .077$ , consistent with H5. Tukey HSD post-hoc comparisons (computed from the group means, standard deviations, and sample sizes in Table 5) showed that the balanced hybrid group (2–3 office days per week) had significantly higher engagement than both the remote-dominant group ( $p < .001$ ) and the office-dominant group ( $p = .005$ ), with no significant difference between the remote-dominant and office-dominant groups ( $p = .83$ ). Homogeneity of variance was judged from the group standard deviations (largest-to-smallest ratio = 1.16, well below the rule-of-thumb of 2), because Levene's test requires case-level data. Because schedule was analysed as three categories, these results show that engagement was highest in the middle schedule group; they do not by themselves establish an inverted-U (curvilinear) relationship, which would require testing a quadratic term for the number of office days. The pattern is nevertheless consistent with recent research suggesting that a balance between flexibility and structured opportunities for face-to-face interaction may be important for engagement (Tabassum et al., 2025).

## Discussion

This simulation study aimed to estimate the relative associations of hybrid work-related factors with employee engagement and to examine whether engagement differs by the intensity of the hybrid working schedule. In the simulated data, all four hypothesized predictors were statistically significant, although they were not equally strong. A consistent finding in the recent literature is the importance of leadership support: evidence suggests that hybrid working is neither inherently harmful nor inherently beneficial for engagement, and that outcomes depend heavily on leadership behaviour (Charles et al., 2025; Nagori & Lawton, 2026). Engagement appears to be higher where leaders of distributed teams cultivate trust, provide visibility, and foster psychological safety, and lower where they do not.

Work-life balance was the second strongest predictor, which is similar to previous IT-sector studies suggesting that flexibility is associated with higher engagement largely through improved work-life balance rather than through flexibility itself (Rajeswari & Venugopal, 2024; Reddy & Dasari, 2025; Haar, Sune, Russo, & Ollier-Malaterre, 2019). The comparatively small association of communication quality is unsurprising, since it suggests that providing collaboration technology is not enough; as Nagori and Lawton (2026) state, the tools need to be accompanied by clear norms. The moderate negative correlations of technostress with work-life balance ( $r = -.40$ ) and with engagement ( $r = -.34$ ) suggest that technostress may weaken the boundaries that are conducive to engagement.

From a practical perspective, the ANOVA results may inform HRM policy discussions: in the simulated data, neither the remote-dominant nor the office-dominant schedule was associated with the highest engagement, whereas two to three office days per week were linked to significantly higher engagement. This echoes the idea that a balanced schedule of in-person and remote work should be structured around purposeful, strategic in-person moments rather than around increased autonomy or conventional office attendance (Tabassum et al., 2025). It is also in

line with the wider discussion on the mismatch between current engagement strategies and the psychological needs of actual hybrid work (Vartiainen & Vanharanta, 2024).

These results can be read alongside the ongoing global decline in engagement reported by Gallup (2026). In the simulated data, leadership support and work-life balance showed the strongest associations with engagement, and Gallup (2026) reports that the decline has been most pronounced among managers. It may therefore be worthwhile for HRM to test whether equipping managers, rather than only individual contributors, with the skills and structural support to lead hybrid teams effectively is associated with higher engagement.

### **Implications for HRM Practice**

Because this study did not measure HRM roles or HR practices, the following points are implications to be tested rather than empirically established conclusions. The simulated pattern is consistent with the argument that HRM in hybrid workplaces may need to move beyond policy enforcement and scheduling toward leadership capability development, technostress prevention, and ongoing, evidence-based monitoring of engagement by hybrid schedule type (Nagori & Lawton, 2026). Possible practical implications are: (a) focus leadership development initiatives on trust-building and visibility across distributed teams; (b) set norms for communication across the organisation, with particular emphasis on reducing after-hours communication; (c) use pulse surveys to identify groups of employees at risk, segmented by hybrid schedule; and (d) use the balanced hybrid schedule identified in this simulation as a starting point, a design point to be validated against each organisation's context rather than a universal prescription.

### **Limitations and Future Research**

There are several limitations. First and most important, the data used in this paper were simulated to demonstrate a full quantitative workflow, in line with effect sizes reported in the cited literature; the coefficients are therefore illustrative rather than empirical, and all analyses must be rerun on primary data before any substantive conclusions are drawn. Second, even with real data, a cross-sectional design would not permit causal inferences; a longitudinal design would be needed to establish whether changes in leadership support or technostress precede changes in engagement over time. Third, a primary-data study relying on convenience and snowball sampling would limit generalisability beyond the sectors sampled, and self-report data for all variables may inflate common-method variance. Fourth, the study did not measure HRM roles or HR practices, so all HRM conclusions are implications rather than tested findings. Fifth, measurement validation is limited to Cronbach's alpha; confirmatory factor analysis, composite reliability, average variance extracted, discriminant validity, and the assumption checks that require case-level data (residual normality, linearity, homoscedasticity, and Levene's test) are needed in a primary-data study. Sixth, because schedule was analysed as three categories, the curvilinear pattern was not tested directly. Future studies should use longitudinal or multi-wave designs, test a quadratic (inverted-U) relationship between the number of office days and engagement across industries and national contexts, include HRM practice variables, and explore

moderators such as job type, caregiving responsibilities, and organisational size, as recommended by Nagori and Lawton (2026).

## Conclusion

HRM is increasingly expected to support hybrid working and sustain engagement, going beyond simply administering policy (Nagori & Lawton, 2026). In this simulation study, leadership support and work–life balance showed the strongest positive associations with engagement, technostress was a significant negative correlate, and a schedule of 2–3 office days per week was associated with the highest engagement. Because the data are simulated, these findings are illustrative; they suggest hypotheses about how HRM might approach engagement strategies in hybrid workplaces, which should be tested with primary data and with measures of HRM practices.

## References

- Allen, K. S., Grelle, D., Lazarus, E. M., Popp, E., & Gutierrez, S. L. (2024). Hybrid is here to stay: Critical behaviors for success in the new world of work. *Personality and Individual Differences*, 217, 112459. <https://doi.org/10.1016/j.paid.2023.112459>
- Appel-Meulenbroek, R., Kemperman, A., van de Water, A., Weijs-Perrée, M., & Verhaegh, J. (2022). How to attract employees back to the office? A stated choice study on hybrid working preferences. *Journal of Environmental Psychology*, 81, 101784. <https://doi.org/10.1016/j.jenvp.2022.101784>
- Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, 13(3), 209–223. <https://doi.org/10.1108/13620430810870476>
- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
- Brough, P., Timms, C., O'Driscoll, M. P., Kalliath, T., Siu, O.-L., Sit, C., & Lo, D. (2014). Work–life balance: A longitudinal evaluation of a new measure across Australia and New Zealand workers. *International Journal of Human Resource Management*, 25(19), 2724–2744. <https://doi.org/10.1080/09585192.2014.899262>
- Charles, W. P., Mobara, A., Beretu, T., & Mhembere, L. Y. (2025). How hybrid work and organisation support shape an IT company's employee engagement. *SA Journal of Human Resource Management*, 23(0), Article a3161. <https://doi.org/10.4102/sajhrm.v23i0.3161>
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64(1), 89–136. <https://doi.org/10.1111/j.1744-6570.2010.01203.x>
- Curcuruto, M., Williams, S., Brondino, M., & Bazzoli, A. (2023). Investigating the impact of occupational technostress and psychological restorativeness of natural spaces on work engagement and work–life balance satisfaction. *International Journal of Environmental Research and Public Health*, 20(3), 2249. <https://doi.org/10.3390/ijerph20032249>
- Downs, C. W., & Hazen, M. D. (1977). A factor analytic study of communication satisfaction. *The Journal of Business Communication*, 14(3), 63–73. <https://doi.org/10.1177/002194367701400305>

- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. (2002). Perceived supervisor support: Contributions to perceived organizational support and employee retention. *Journal of Applied Psychology*, 87(3), 565–573. <https://doi.org/10.1037/0021-9010.87.3.565>
- Gallup. (2026). State of the global workplace: 2026 report. Gallup, Inc. <https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx>
- Haar, J. M., Sune, A., Russo, M., & Ollier-Malaterre, A. (2019). A cross-national study on the antecedents of work–life balance from the fit and balance perspective. *Social Indicators Research*, 142(1), 261–282. <https://doi.org/10.1007/s11205-018-1875-6>
- Nagori, R., & Lawton, N. R. (2026). Sustaining employee engagement and wellbeing in hybrid work: Strategic perspectives for HRM professionals. *Merits*, 6(3), 18. <https://doi.org/10.3390/merits6030018>
- Naqshbandi, M. M., Kabir, I., Ishak, N. A., & Islam, M. Z. (2024). The future of work: Work engagement and job performance in the hybrid workplace. *The Learning Organization*, 31(1), 5–26. <https://doi.org/10.1108/TLO-08-2022-0097>
- Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and empirical validation. *Information Systems Research*, 19(4), 417–433. <https://doi.org/10.1287/isre.1070.0165>
- Rajeswari, A., & Venugopal, P. (2024). Exploring the impact of hybrid work model on employee productivity among IT professionals: The mediating role of employee engagement. *International Journal of Process Management and Benchmarking*, 17(4), 423–443. <https://doi.org/10.1504/IJPMB.2024.139970>
- Reddy, B. N., & Dasari, R. B. (2025). Analyzing the impact of hybrid work models on employee engagement and performance in the IT industry. *International Journal of Enhanced Research in Management & Computer Applications*, 14(2), 10–18.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, 66(4), 701–716. <https://doi.org/10.1177/0013164405282471>
- Siddika, B. A. (2025). Effect of hybrid working on employee engagement. *Annals of Human Resource Management Research*, 5(2), 85–97. <https://doi.org/10.35912/ahrmr.v5i2.2892>
- Tabassum, S., Haque, S. M. I., Ahsan, M. A., Salim, M., & Khan, P. A. (2025). Assessing employees' engagement in hybrid work arrangement: Mediating role of employee voice for achieving SDG 8 and SDG 10. In *Proceedings of the International Conference on Environmental, Social, and Governance (ICESG 2024)*. Atlantis Press. [https://doi.org/10.2991/978-2-38476-358-0\\_24](https://doi.org/10.2991/978-2-38476-358-0_24)
- Ugwu, F. O., Enwereuzor, I. K., & Mazei, J. (2023). Is working from home a blessing or a burden? Home demands as a mediator of the relationship between work engagement and work–life balance. *Applied Research in Quality of Life*, 18(1), 341–364. <https://doi.org/10.1007/s11482-022-10084-6>
- Vartiainen, M., & Vanharanta, O. (2024). True nature of hybrid work. *Frontiers in Organizational Psychology*, 2, Article 1448894. <https://doi.org/10.3389/forgp.2024.1448894>