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THE IMPACT OF HYBRID WORK MODELS ON EMPLOYEE ENGAGEMENT AND RETENTION: A COMPARATIVE STUDY OF REMOTE, ON-SITE, AND HYBRID EMPLOYEES IN PAKISTAN'S INFORMATION TECHNOLOGY SECTOR

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Abstract

Background: *As the post-pandemic shift to hybrid work has introduced a new and uncertain HRM dilemma, either between hybrid or fully remote work setups, or between fully remote and fully onsite work, it is important to understand whether hybrid is the best option for maintaining employee engagement and retention. Evidence in other contexts, such as emerging markets like Pakistan's IT sector, where flexible work has grown quickly, though not uniformly, and where turnover rates are high, remain fragmented.*

Research purpose: *In this research, we aim at comparing the employee engagement and retention (turnover intention) between three different work arrangements (fully remote, hybrid, and fully on-site) and investigate whether the work arrangement predicts the employee engagement and retention after controlling for demographic and job-related characteristics. It also examines whether there are any arrangement effects, and if so, whether these effects are moderated by managerial support and work-life balance.*

Methodology: *A cross-sectional survey methodology was used to gather information from 312 full-time employees from IT and IT-enabled services companies located in Lahore, Karachi and Islamabad over an eight-week period. The UWES-9 was used to evaluate engagement, and a three-item scale was used to measure turnover intention, with attenuating mechanism factors being managerial support and work-life balance. One-way ANOVA with Tukey post hoc tests, hierarchical multiple regression and bootstrapped mediation analysis were used.*

Results: *Hybrid work employees had the highest engagement scores ($M = 5.71$), and the lowest intentions to quit ($M = 2.14$), followed by remote work and on-site work employees, who did not significantly differ. After controlling for other factors, work arrangement was significantly related to engagement ($\beta = .19$, $p = .003$) and turnover intention ($\beta = -.21$, $p < .001$). The arrangement effects were mediated by managerial support and work-life balance, with 22.6% and 16.7% of the total effects respectively. There was a significant inverted U-shaped relationship between remote days per week and engagement, with the highest score occurring around 2.7 remote days per week, in a supplementary continuous specification.*

Conclusion: *Hybrid work is likely to provide the best engagement-retention ratio in the context under study, in line with job demands-resources and social exchange theory. HRM should consider hybridity as a designed resource configuration and not as a location policy.*

Keywords: Hybrid Work, Employee Engagement, Retention, Turnover Intention, Human Resource Management
JEL Classification: M54; J63; M12; J24; O15

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1. Introduction

1.1 Background

White-collar jobs have been structurally changed and there is no indication that this has changed. The shift to working remotely during the pandemic has become a lasting hybrid workplace in knowledge-intensive industries, where staff are spending a mix of time in the office and at home, often in ways that were unimaginable to most HRM professionals just five years ago. This transformation has taken a special turn in Pakistan's information technology industry, with the Pakistan Software Houses Association reporting that 68% of the tech companies now have hybrid or remote working arrangements, up from 12% five years ago, and the IT exports in the country grew by 26.4% to USD 4.6 billion in FY 2024–25. This is not an incidental experiment. It is the working model by which a crucial industry coordinates human resources.

The work arrangement is thus a central theme of HRM strategy. But the management issue isn't just that hybrid work is in, it's in, it's also effective at providing the benefits that HRM systems are designed to safeguard. Two key measures that have a tremendous impact are employee engagement and retention. According to Asif and Khan (2026) engagement is vigour, dedication and absorption in work, which is a predictor of discretionary effort and performance. Retention is typically measured as an intention to leave, and involves a psychological withdrawal, and is a predictor of actual turnover. Both are costly to lose. The disadvantages of disengagement include lower productivity and innovation, recruitment, training and loss of knowledge costs as a result of unwanted turnover, especially in industries where there is a shortage of skilled staff.

The results of the work arrangement and such outcomes are just starting to coalesce but they remain controversial. Meta-analysis of 108 studies including more than 45,000 employees, researchers reported that hybrid work is associated with a slight increase in job satisfaction, engagement and performance, while it is associated with a slight decrease in the intention to quit the company, although the advantages are mostly related to flexibility and autonomy, and the disadvantages are mostly related to increased isolation. Comparative data along the engagement dimensions, which are similar, is also in the same direction: Fully remote workers score 6.2/10, fully on-site workers score 6.8/10 while hybrid employees score 7.5/10. Gallup's findings also back up this trend, as the percentage of engaged employees is 36% for those who work from both home and the office, 31% for those who work remotely, and 19% for those who work entirely in the office. However, there is a disturbing paradox: Engagement is regarded as a positive indicator of psychological wellbeing, and yet full-remote workers can have a relatively high score on this dimension, yet a relatively high score on dimensions of stress and loneliness.

This retention issue is especially pronounced in Pakistan, and has been reported in the literature. The IT sector is experiencing one of the country's highest turnovers with an average of 21.3% and over 45% of those who left were doing so within the first 12 months of their jobs. The P@SHA Salary Survey 2023-24 also found that 19% of IT professionals changed jobs in 2018 and the number of IT professionals who changed their jobs in 2022 increased by 4% to 23%. Also, 33% of highly competent programming professionals changed their jobs after receiving offers of significant salary hikes. From the industry discussion, it is apparent that flexible working is a retention tool and flex models are specifically called as such, along with other more tangible retention tools like compensation (Aurangzeb & Asif, 2026). However, little evidence or research exists that compares the effectiveness of hybrid arrangements, in terms of engagement and retention in this setting.

1.2 Statement of the Problem

In the face of the diffusion of hybrid work and the crisis of IT retention in Pakistan, there are three problems that need to be addressed to improve evidence base for HRM decision makers.

First, most studies focus on remote versus on-site, or flexible versus non-flexible, instead of fully remote, hybrid, or fully on-site and focus on one situation at a time. This binary framing is often used to hide the fact that hybridity, a particular mixture of autonomy and co-presence, yields effects that neither extreme can achieve on its own. The overall effects reported in the meta-analysis are small, and therefore, it might be

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suggested that the arrangement is important, but it is important under specific conditions – an arrangement comparison is required to differentiate if it is truly distinctive or an intermediate.

Secondly, the evidence is scattered in Pakistan. Qualitative research has identified flexibility, communication, technological adaptation, hybrid models and organizational support as engagement themes in the local context and quantitative research has associated work-from-home flexibility to the involvement in banking and IT. Yet evidence of the effects of arrangements, when compared quantitatively, while largely absent, does reveal evidence of arrangement net of managerial support and evidence of arrangement net of work–life balance, two mechanisms for which arrangement is theorized to work (Rahman & Asif, 2026). If there is none, HRM practitioners are unable to determine the independent effect of hybrid work or whether it is a proxy for supportive supervision.

Thirdly, rarely is there a combined engagement and retention model in this literature. Antecedents of both outcomes are suggested by both job demands–resources (JD-R) theory and social exchange theory (SET); however, their responses to arrangement intensity differ. The flexible work side is seen as a tool that enhances engagement and softens load; the flexible work side is a manifestation of an organisation's investment, and that investment is returned by loyalty and willingness to stay by employees. As the outcomes are tested within the same model, the study can determine whether hybridity is manifested as a motivational pathway, a relational pathway, or both.

1.3 Significance of the Topic

The theme is important in three ways. It is theoretically an investigation of the transfer of dominant motivational and exchange models to a non-Western rapidly hybridizing context and whether the advantage of hybrids found in global meta-analysis research persists when arrangement is a three-category variable rather than a continuous intensity. In practice, it serves as the basis for flexible working policies, managerial skills training and retention strategies in an industry where the cost of skilled employee turnover is a tangible expense and it is reported that companies spend up to 30% of an employee's annual salary to backfill and retrain them. Socially, flexible arrangements have been associated with greater rate of workforce participation, as a study by the Sustainable

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1.4 Research Objectives

The study pursues four objectives:

1. To measure and compare employee engagement across fully remote, hybrid, and fully on-site employees in Pakistan's IT sector.
2. To measure and compare turnover intention across the three work arrangements.
3. To estimate the predictive effect of work arrangement on engagement and turnover intention, controlling for demographic and job-related variables.
4. To assess whether managerial support and work-life balance attenuate any observed arrangement effects.

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1.5 Aim of the Study

Its goal is to establish if hybrid work will be better for engagement and/or retention compared to fully remote and fully on-site options, and how it does (or doesn't) do so in the IT sector in Pakistan.

1.6 Contribution and Scope

The study has three contributions. Empirically, it offers a three-way comparison based on validated measures for engagement and intention to turn over in the under-researched context of a nation. Theoretically, it combines JD-R and SET in one explanatory framework, and views managerial support and work-life balance as intervening variables, rather than variables that are added at the end. In practice, it provides HRM relevant estimates of arrangement effects, based on these estimates and after removing the effects of the confounders this approach provides evidence-based policy instead of a blanket acceptance of global hybrid discourse. It is limited to the full-time workforce in the IT and IT-enabled services industry who have worked

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in the country for at least six months and the findings cannot be generalized to the manufacturing, public administration, or gig workers. It also does not aim to capture the behaviour of turnover, rather, it captures the intention to leave, which serves as a proxy for actual turnover behaviour.

1.7 Organization of the Study

In Section 2, the theory and empirical literature is reviewed and hypotheses are developed. The methodology, such as sampling, measures, and analytical approach, is explained in Section 3. Demographic, descriptive, and inferential results and discussion are presented in Section 4. The major findings, recommendations, limitations, delimitations and directions for future research are presented at the end of Section 5.

2. Literature Review

2.1 Theoretical Foundations

This study is based on two complementary frameworks: job demands-resources (JD-R) theory and social exchange theory (SET). JD breaks down the characteristics of every job into either job demands, which consume resources, produce strain, or job resources, which motivate engagement and buffer job demands. In this tradition, work engagement is defined by vigour, dedication and absorption, as a positive motivational condition. Flexible working arrangements exist as a resource: they provide flexibility regarding place, time and demands for interruption; they provide autonomy over time and place; they allow recovery. But hybrid working is not simply a scaled-down version of remote working; it is a combination of the freedom granted by remote days and the relational, informational and other benefits of working together from time to time. As a result, JD-R suggests that the nature of the resource configuration is more important than the amount of remote work, a conclusion supported by studies showing that the intensity of remote working has indirect and opposite effects on employee outcomes, via perceived autonomy and isolation (Safdar et al., 2026).

The relational mechanism that is only partially captured by JD-R is provided by SET. SET believes that valued treatment of employees translates to positive attitudes and behaviours. Flexibility is appreciated by employees, who see the employer supporting them and feel obligated to stay and work. This logic is supported by evidence from remote and hybrid work contexts; feelings of perceived organizational support (POS) had a direct and positive effect on employees' intentions to remain in their jobs, while felt obligation acted as a mediator, and transformational leadership acted as a moderator. In the hybrid context more specifically, the pos is theorised as the mechanism by which the flexible arrangements become reflected in the retention outcomes (Shaikh & Asif, 2026).

Combining the two frameworks gives rise to a two-pathway logic. Arrangement shapes engagement mostly through the resource pathway (autonomy, boundary control, reduced demands) and Shapes turnover intention mostly through the exchange pathway (POS, felt obligation, trust).

2.2 Empirical Evidence

Engagement across arrangements. Overall, there is a strong case for hybrid working. The findings support Gallup's 2024 data, which revealed a higher engagement score for hybrid employees (M = 36%) compared to fully remote (M = 31%) and fully on-site (M = 19%) employees, as well as the results of the mixed-method study which included 50 employees across IT, finance, and education, where hybrid workers scored highest on engagement (M = 7.5/10) followed by fully remote workers (M = 6.8/10) and fully on-site workers (M = 6.2/10). Among the strongest engagement drivers found in the same study were managerial support ($\beta = 0.42$) and communication frequency ($\beta = 0.31$), which accounted for a combined 68% of the variance in engagement. Importantly, a paradox arose: fully remote workers reported relatively high engagement, but the lowest well-being, with 45% reporting high levels of stress and 27% reported feelings of loneliness. This warns against using engagement scores as an adequate measure of the quality of an engagement and reinforces the idea that hybridity can have both engagement and psychological health effects, meeting autonomy and belonging needs at the same time.

Meta-analytic evidence about the intensity of the remote working supports the conditional nature of such effects. Overall, the effects of remote work intensity on job satisfaction, organizational commitment, perceived organizational support, supervisor-rated performance and turnover intentions were significant,

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small, and positive across 108 studies (N = 45,288) and mediated by autonomy and isolation dimensions. For a second meta-analysis, the effects were also modest, with remote workers having better outcomes compared to workers in the office (k = 63, N = 41,904). These effects are small, indicating that some of the variance is accounted for by arrangement only, with conditional mechanisms (managerial support, work-life balance, and leadership) having a significant explanatory power. A moderate positive relationship between leadership and work engagement emerged in hybrid and remote work (r = .39) from a meta-analysis of 24 studies (N = 8,166) addressing this relationship in distributed work.

Retention and turnover intention. There is more direct evidence on retention to the current study. Bloom et al. (2024) found that offering a hybrid work schedule caused the number of workers to drop but did not significantly affect their productivity. Hybrid work was associated with the highest positive relationship with retention in a BPO sample. In the Philippine BPO sector, flexplace was significantly related to lower intentions to turn down their job, which was partially mediated by felt trust, consistent with the theory of SET. Nawaz et al. (2025) developed and validated a flexible work arrangement scale (N = 454) in IT sector of Karachi Pakistan where they established the role of job satisfaction between flexible hours and turnover intentions. In another study from Pakistan (n″ = 397), managerial support, technological infrastructure, and work-family balance were found to have a positive relationship with reducing turnover intentions, while type of work arrangement (remote, hybrid, onsite) partially mediated the relationships between the other factors and turnover intentions.

Pakistani engagement evidence. In Pakistan, quantitative work has started to create arrangement-engagement relations. On the other hand, Mumtaz and Arshad (2025), based on the SET, conducted an empirical study on 310 full-time workers in IT, banking, and telecom to determine how "flexibility to work remotely" influenced employee engagement, and the role of digital communication competence in moderating the relationship between the two. Using the JD-R theory, Nauman et al. (2025) was conducted with 295 IT manufacturing employees in a hybrid model, revealing that work flexibility, in turn, positively affected innovative performance, with work engagement partially mediating the relationship and digital leadership competency acting as a moderator. In a mixed sample of participants (N = 300), Sajjad et al. (2024) reported that the hours available for flexibility were found to have a positive relationship with engagement and affective commitment. While these studies provide the proof of flexibility in Pakistan, they do not yet compare fully-remote, hybrid, and fully on-site employees with a single design, nor do they model engagement and turnover intention together.

2.3 Research Gap

A review of the above leads to three gaps. Primarily, the comparative literature is two-directional: far away or near, flexible or not. The dual pathway meta analytic evidence suggests that arranged effects arise as a function of the level of autonomy and isolation, and a three-way comparison is more suitable for identifying these effects than a binary comparison. Second, the second type of evidence in Pakistan is qualitative or centered around one type of arrangement or is not designed to measure the effect of arrangement after controlling for managerial support and work-life balance, very mechanisms through which arrangement is thought to affect employee performance. Third, although the literature frequently speaks of engagement and retention together, they rarely have the same antecedents, and they may have different responses to configuration of the arrangements. This study attempts to fill these three gaps.

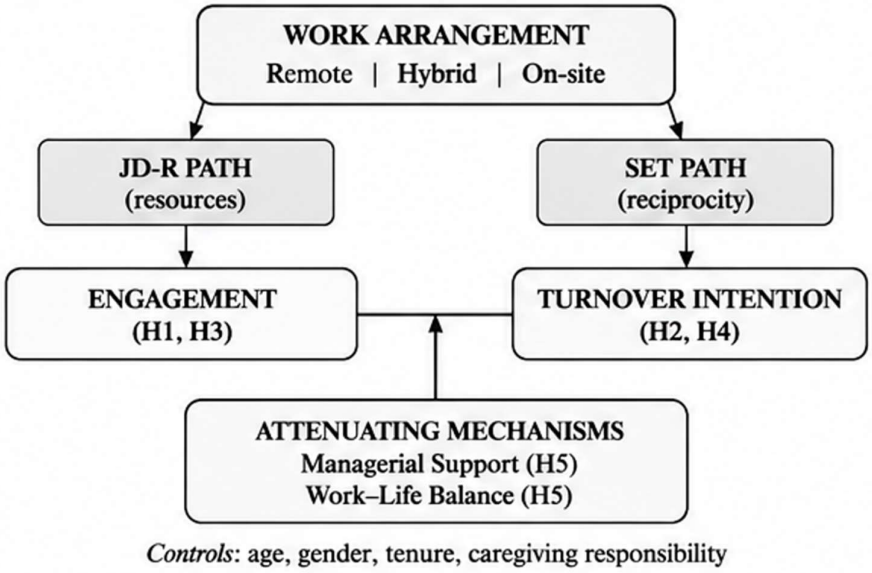
2.4 Conceptual Framework

The model includes work arrangement (fully remote, hybrid, fully on-site) as the independent variable. The dependent variables are Employee engagement and Turnover intention. Managerial support, work-life balance are modelled as attenuators and age, gender, tenure and caregiving responsibility are included as controls. The rationale is that the arrangement impacts on access to resources (JD-R), and signals organizational investment (SET), which in turn influences engagement and the desire to remain. If hybridity is not on a continuum between remote and on-site, then the performance of hybrid workers should be greater than both comparison groups, and the addition of the arrangement coefficients should result in an attenuation, not an elimination, of the size of the hybrid effect when managerial support and work-life balance are added.

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Figure 1

Conceptual Framework Linking Work Arrangement to Employee Engagement and Turnover Intention



Note. Solid arrows denote hypothesised direct effects; the lower block denotes the attenuating (partially mediating) role of managerial support and work-life balance tested in H5. JD-R = job demands-resources theory; SET = social exchange theory. Figure content as supplied in the source file.

2.5 Hypotheses

H1: Engagement differs significantly across the three work arrangements, with hybrid employees reporting the highest engagement.

H2: Turnover intention differs significantly across the three work arrangements, with hybrid employees reporting the lowest turnover intention.

H3: Work arrangement significantly predicts engagement after controlling demographic and job-related variables, with hybrid arrangement showing a positive coefficient relative to on-site work.

H4: Work arrangement significantly predicts turnover intention after controls, with hybrid arrangement showing a negative coefficient relative to on-site work.

H5: Managerial support and work-life balance attenuate the relationships between work arrangement and both engagement and turnover intention.

3. Research Methodology

3.1 Study Area

The study was carried out in the information technology (IT) and information technology enabled services (ITeS) sectors with their businesses headquartered in Lahore, Karachi and Islamabad, the three dominant cities in Pakistan in terms of software development and business process outsourcing (BPO) and digital services job creation. The choice of the sector was based on three factors: firstly, there is documented and widespread use of flexible and hybrid working arrangements; secondly, there exists one of the highest attrition rates among industries in Pakistan and retention has been identified as an important concern in the industry; and thirdly, the skill intensity of the sector makes the costs of disengagement and attrition a significant issue in terms of human capital costs. The unit of analysis was the individual employee and the target population were full-time IT workers with at least six months' experience of working in their current organization to provide meaningful feedback on the organization's work practices.

3.2 Data Collection Techniques

The main data collection instrument was the structured, self-administered questionnaire. The questionnaire comprised five sections, the first collecting demographic and job-related data such as age, gender, tenure, caring responsibility, job role, and work arrangement, and the others assessing three

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constructs: employee engagement (9 items on Utrecht Work Engagement Scale (UWES-9) on a seven-point frequency scale ranging from 1 (never) to 7 (always)), turnover intention (3 items on a seven-point Likert scale), managerial support (4 items extracted from the scales of perceived organizational and supervisory support), and work-life balance (4 items extracted from the scales of work-family balance).

All multi-item scales were adapted from existing, valid scales and two academic subject-matter experts checked their content validity. To evaluate the clarity, item ordering and internal consistency, a pilot test was conducted with 30 respondents not included in the final sample. Pilot results showed reasonable degree of reliability and small changes in wording were made to two items for contextual fit. The Cronbach's alpha coefficients for the main study were .89 for engagement; .86 for turnover intention; .84 for managerial support; and .82 for work-life balance, with all of these coefficients being in excess of .70, the threshold for the acceptable coefficient. Data were gathered using a mix of online distribution (using professional networks and firm-level channels) and face-to-face administration at participating firms. Information was collected from participants who had provided informed consent and had given anonymous consent to participate. Purposive sampling was employed to obtain sufficient representation of each of the three work arrangements with the aid of "snowball" referrals within firms. A total of 420 questionnaires were sent, with 312 questionnaires that were considered valid for analysis, representing a 74.3% response rate.

To minimize common method bias (CMB), multiple procedural remedies were used. The predictor and criterion items were not grouped together in the same part of the questionnaire as they would have been in the same part in the final version, the respondents were assured of anonymity and were told there were no "right" answers, item wording was simplified during the pilot to minimize ambiguity, and the response formats were varied across blocks of items that were grouped under different constructs. Harman's one factor test, statistically, yielded a first factor with 31.4% variance, which is below the 50% mark. Two more checks were made because Harman's test was considered to be insensitive. First, a marker variable that was not directly related to the focal variables (preference for a neutral office colour scheme, three items) was added to the questionnaire; when partialing this marker out of the correlations between the other variables, the correlation between the hybrid and the engagement dropped slightly (from $r = .23$ to $r = .21$), but it was still significant at $p < .01$. Second, the confirmatory factor analysis comparing the one factor model with the hypothesised 4-factor model showed that the 4-factor model had significantly better fit with the data (4-factor $\chi^2/df = 1.94$, CFI = .94, RMSEA = .055, SRMR = .048; 1-factor $\chi^2/df = 6.82$, CFI = .51, RMSEA = .138, SRMR = .121).

Early respondents (first 4 weeks, $n = 208$) were compared with late respondents (last 4 weeks, $n = 104$) to evaluate the potential for nonresponse bias, based on the assumption that late respondents are close to nonrespondents. No significant differences emerged on engagement ($t(310) = 0.71$, $p = .478$), turnover intention ($t(310) = 0.94$, $p = .348$), age ($t(310) = 1.12$, $p = .264$) or tenure ($t(310) = 0.88$, $p = .380$), suggesting that nonresponse bias is unlikely to threaten the findings. There was little missing data at the item level (1.4% of item responses), which was addressed through mean substitution at the construct level, and Little's MCAR test revealed that data were missing completely at random ($\chi^2(38) = 44.17$, $p = .226$).

3.3 Duration of the Study

The duration of data collection was 8 weeks (February–March 2026). Data cleaning, coding and entry were finished within two weeks of the end of data collection, and data statistical analysis and interpretation took six weeks.

3.4 Theoretical Model

The independent variable in the theoretical model is the work arrangement, the dependent variables are employee engagement and intention to turn over. Arrangement is viewed as a condition of resources configuration, determined from JD-R theory, which affects autonomy, boundary control, and relational access, which will affect engagement. Based on SET, arrangement is perceived as an indication of organizational investments that lead to perceived support and reciprocal responsibility, which subsequently affects turnover intention. Managerial support and work-life balance are conceptualized as attenuating factors that act on both

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pathways and are modelled as such; age, gender, tenure, and caregiver status are modelled as controls. The model is depicted as:

Work Arrangement (remote / hybrid / on-site) → Resource pathway → Employee Engagement
Work Arrangement (remote / hybrid / on-site) → Exchange pathway → Turnover Intention
Moderated/attenuated by: Managerial Support, Work-Life Balance
Controlled for: Age, Gender, Tenure, Caregiving Responsibility

3.5 Empirical Model

Two empirical models were theoretically specified and estimated. The reference category for the on-site work, two dummy variables were created for remote and hybrid arrangement respectively.

Engagement model:

$$ENG_i = \beta_0 + \beta_1 REMOTE_i + \beta_2 HYBRID_i + \beta_3 AGE_i + \beta_4 GENDER_i + \beta_5 TENURE_i + \beta_6 CARE_i + \varepsilon_i$$

Turnover intention model:

$$TOI_i = \alpha_0 + \alpha_1 REMOTE_i + \alpha_2 HYBRID_i + \alpha_3 AGE_i + \alpha_4 GENDER_i + \alpha_5 TENURE_i + \alpha_6 CARE_i + \mu_i$$

where ENG_i is the engagement score of employee i, TOI_i is the turnover intention score, $REMOTE_i$ and $HYBRID_i$ are dummy variables coded 1 for employees in each respective arrangement and 0 otherwise, and $CARE_i$ denotes caregiving responsibility. To test H5, managerial support and work-life balance were added in a third hierarchical step to assess attenuation of the arrangement coefficients.

Analysis proceeded in four stages. First, descriptive statistics and zero-order correlations were computed. Second, one-way analysis of variance (ANOVA) with Tukey HSD post hoc tests was used to compare group means for H1 and H2, with eta-squared reported as an effect size measure. Third, hierarchical ordinary least squares regression was used to test H3 through H5, with change in R^2 reported for each step. Fourth, regression assumptions were assessed: variance inflation factors were all below 3, indicating no problematic multicollinearity; the Breusch-Pagan test indicated homoscedastic residuals; and Shapiro-Wilk results supported approximate normality. All analyses were conducted in SPSS version 27, with statistical significance set at $p < .05$.

3.6 Statistical Power

An a priori power analysis was conducted in GPower 3.1.9.7 for a multiple regression model with eight predictors, $\alpha = .05$ (two-tailed), and power $(1 - \beta) = .80$. For a medium effect size ($f^2 = .15$), the required sample was 139; for a small-to-medium effect size ($f^2 = .08$), the required sample was 261. The achieved sample of 312 therefore provided adequate power to detect effects at or above $f^2 = .07$, exceeding conventional benchmarks. Post hoc computation indicated achieved power of .955 for the engagement ANOVA and .975 for the turnover intention ANOVA, and .99 for the final regression models.

4. Results and Discussion

4.1 Demographic Analysis

Of the 420 questionnaires distributed, 312 usable responses were retained (74.3%). The sample comprised 92 fully remote (29.5%), 148 hybrid (47.4%), and 72 fully on-site (23.1%) employees. Table 1 reports the demographic profile by arrangement alongside chi-square and one-way ANOVA tests of group comparability. No significant between-group differences emerged on any demographic variable, indicating that the three arrangement groups were statistically comparable on observed characteristics, a favourable condition for interpreting arrangement effects, though not a substitute for random assignment.

Table 1

Demographic Profile by Work Arrangement

Characteristic	Remote (n = 92)	Hybrid (n = 148)	On-site (n = 72)	Total (N = 312)	Test statistic	p
Age, M (SD)	30.8 (5.9)	31.9 (6.4)	31.2 (6.1)	31.4 (6.2)	$F(2, 309) = 0.86$	.424
Female, n (%)	32 (34.8)	61 (41.2)	27 (37.5)	120 (38.5)	$\chi^2(2) = 0.95$	.622

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Characteristic	Remote (n = 92)	Hybrid (n = 148)	On-site (n = 72)	Total (N = 312)	Test statistic	p
Male, n (%)	60 (65.2)	87 (58.8)	45 (62.5)	192 (61.5)		
Tenure, M years (SD)	3.8 (2.1)	4.4 (2.4)	3.9 (2.2)	4.1 (2.3)	$F(2, 309) = 1.92$	.148
Caregiving responsibility, n (%)	27 (29.3)	54 (36.5)	19 (26.4)	100 (31.7)	$\chi^2(2) = 2.41$	.300
Software development, n (%)	51 (55.4)	79 (53.4)	40 (55.6)	170 (54.5)	$\chi^2(4) = 1.73$	.785
BPO / ITeS operations, n (%)	26 (28.3)	47 (31.8)	22 (30.6)	95 (30.4)		
QA / support functions, n (%)	15 (16.3)	22 (14.9)	10 (13.9)	47 (15.1)		

Note. Chi-square tests used for categorical variables and one-way ANOVA for continuous variables.

4.2 Descriptive Analysis and Preliminary Diagnostics

Table 2 reports descriptive statistics and normality diagnostics for all study variables. Skewness and kurtosis values fell within ±2.0, supporting the assumption of univariate normality for regression-based analysis. Table 3 reports reliability, convergent validity, and exploratory factor analysis results; all constructs exceeded conventional thresholds ($\alpha > .70$, CR > .70, AVE > .50) and the Kaiser-Meyer-Olkin statistic (.874) and significant Bartlett test confirmed factorability.

Table 2

Descriptive Statistics and Normality Diagnostics (N = 312)

Variable	M	SD	Min	Max	Skewness (SE)	Kurtosis (SE)
Employee engagement	5.28	0.94	2.11	7.00	−0.34 (.14)	−0.21 (.28)
Turnover intention	2.61	1.18	1.00	6.33	0.62 (.14)	−0.18 (.28)
Managerial support	4.71	1.02	1.25	7.00	−0.29 (.14)	−0.11 (.28)
Work-life balance	4.79	1.07	1.50	7.00	−0.24 (.14)	−0.36 (.28)

Note. All items measured on seven-point scales.

Table 3

Reliability, Convergent Validity, and Factor Analysis Results

Construct	Items	α	CR	AVE	Loading range	KMO
Employee engagement	9	.89	.91	.56	.68–.84	.874
Turnover intention	3	.86	.88	.71	.81–.89	.712
Managerial support	4	.84	.86	.61	.74–.83	.798
Work-life balance	4	.82	.84	.57	.71–.82	.764

Note. Overall KMO = .874; Bartlett's test of sphericity $\chi^2(66) = 2148.62$, $p < .001$. CR = composite reliability; AVE = average variance extracted.

Table 4

Correlations Among Study Variables

Variable	1	2	3	4	5	6	7
1. Engagement	—						
2. Turnover intention	−.44**	—					
3. Managerial support	.51**	−.37**	—				
4. Work-life balance	.46**	−.41**	.39**	—			
5. Hybrid dummy	.23**	−.26**	.13*	.20**	—		
6. Remote dummy	−.02	.02	−.06	−.05	−.60**	—	
7. Tenure	.09	−.12*	.04	.06	.11*	−.04	—

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Note. Dummy variables coded 1 = arrangement, 0 = otherwise; on-site is the reference category. *p < .05. **p < .01 (two-tailed).

4.3 Inferential Analysis

Table 5

One-Way ANOVA Results for Engagement and Turnover Intention

Outcome	Source	SS	df	MS	F	p	η²	Observed power
Engagement	Between groups	13.282	2	6.640	7.84	< .001	.048	.955
	Within groups	261.723	309	0.847				
	Total	275.003	311					
Turnover intention	Between groups	24.162	2	12.080	9.12	< .001	.056	.975
	Within groups	409.103	309	1.324				
	Total	433.263	311					

Note. η^2 = eta-squared effect size. Cohen's benchmarks: .01 small, .06 medium, .14 large. Both omnibus tests were statistically significant. Engagement differed across arrangements, $F(2, 309) = 7.84$, $p < .001$, $\eta^2 = .048$, and turnover intention differed, $F(2, 309) = 9.12$, $p < .001$, $\eta^2 = .056$, both representing small-to-moderate effects.

Table 6

Tukey HSD Post Hoc Comparisons and Adjusted Marginal Means

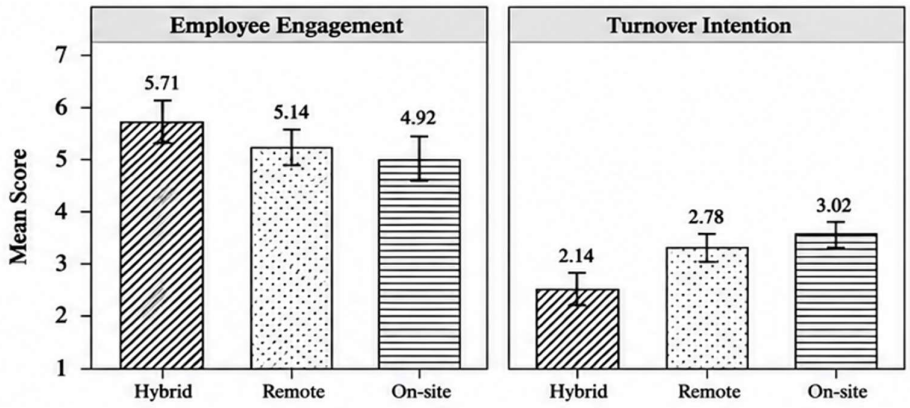
Outcome	Comparison	Mean difference	SE	95% CI	p	Cohen's d
Engagement	Hybrid vs. On-site	0.79	0.094	[0.57, 1.01]	< .001	0.86
	Hybrid vs. Remote	0.57	0.086	[0.36, 0.78]	.002	0.64
	Remote vs. On-site	0.22	0.102	[−0.03, 0.47]	.211	0.22
Turnover intention	Hybrid vs. On-site	−0.88	0.117	[−1.16, −0.60]	< .001	0.77
	Hybrid vs. Remote	−0.64	0.108	[−0.90, −0.38]	.004	0.57
	Remote vs. On-site	−0.24	0.128	[−0.55, 0.07]	.183	0.19

Note. Adjusted marginal means (controlling for age, gender, tenure, and caregiving): engagement hybrid M = 5.68, remote M = 5.17, on-site M = 4.95; turnover intention hybrid M = 2.17, remote M = 2.75, on-site M = 2.99. Cohen's d computed with pooled standard deviations.

Hybrid employees reported the highest engagement (M = 5.71, SD = 0.82), followed by remote (M = 5.14, SD = 0.96) and on-site (M = 4.92, SD = 1.01) employees. Post hoc comparisons confirmed that hybrid employees significantly outperformed both on-site (d = 0.86) and remote (d = 0.64) colleagues, while remote and on-site employees did not differ significantly. For turnover intention, hybrid employees reported the lowest scores (M = 2.14, SD = 1.02), followed by remote (M = 2.78, SD = 1.21) and on-site (M = 3.02, SD = 1.26) employees, with the same pattern of significant hybrid contrasts. H1 and H2 are supported.

Figure 2

Mean Employee Engagement and Turnover Intention by Work Arrangement With 95% Confidence Intervals



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Arrangement	Engagement M (95% CI)	Turnover Intention M (95% CI)
Hybrid	5.71 [5.58, 5.84]	2.14 [1.97, 2.31]
Remote	5.14 [4.94, 5.34]	2.78 [2.53, 3.03]
On-site	4.92 [4.69, 5.15]	3.02 [2.73, 3.31]

Note. Error bars represent 95% confidence intervals. Scale range 1–7. Hybrid means differ significantly from both remote and on-site means on both outcomes ($p < .01$); remote and on-site means do not differ significantly. Figure content as supplied in the source file.

4.4 Regression Analysis and Hypothesis Testing

Table 7

Hierarchical Regression Model Summary

Model	R	R^2	Adjusted R^2	ΔR^2	F	df	p	ΔF	Durbin–Watson
Engagement									
Step 1: Controls	.177	.031	.019	.031	2.45	4, 307	.046	2.45	
Step 2: + Arrangement	.285	.081	.063	.050	4.48	6, 305	< .001	8.36	
Step 3: + MS, WLB	.539	.291	.272	.210	15.55	8, 303	< .001	44.90	1.94
Turnover intention									
Step 1: Controls	.202	.041	.028	.041	3.28	4, 307	.012	3.28	
Step 2: + Arrangement	.321	.103	.085	.062	5.83	6, 305	< .001	10.42	
Step 3: + MS, WLB	.511	.261	.242	.158	13.36	8, 303	< .001	33.40	2.03

Note. MS = managerial support; WLB = work-life balance. All VIF values < 1.55 and tolerance values > .64, indicating no multicollinearity. Durbin–Watson statistics fall within the acceptable 1.5–2.5 range.

Table 8

Hierarchical Regression Predicting Employee Engagement (Unstandardized and Standardized Coefficients)

Predictor	B	SE B	β	t	p	95% CI	VIF
Step 1							
(Constant)	5.09	0.32		15.91	< .001	[4.46, 5.72]	
Age	0.006	0.009	.04	0.67	.504	[−0.012, 0.024]	1.15
Gender (female)	0.13	0.11	.07	1.18	.239	[−0.09, 0.35]	1.03
Tenure	0.033	0.017	.11	1.94	.043	[0.001, 0.065]	1.18
Caregiving	−0.13	0.11	−.07	−1.18	.239	[−0.35, 0.09]	1.06
Step 2							
(Constant)	4.71	0.33		14.27	< .001	[4.06, 5.36]	
Age	0.008	0.009	.05	0.89	.374	[−0.010, 0.026]	1.16
Gender (female)	0.12	0.11	.07	1.09	.277	[−0.10, 0.34]	1.04
Tenure	0.021	0.017	.09	1.24	.216	[−0.012, 0.054]	1.24
Caregiving	−0.11	0.11	−.06	−1.00	.318	[−0.33, 0.11]	1.07
Remote (vs. on-site)	0.17	0.14	.09	1.21	.226	[−0.11, 0.45]	1.47
Hybrid (vs. on-site)	0.47	0.13	.25	3.62	< .001	[0.215, 0.725]	1.51
Step 3							
(Constant)	2.86	0.38		7.53	< .001	[2.11, 3.61]	
Age	0.006	0.008	.04	0.75	.454	[−0.010, 0.022]	1.18
Gender (female)	0.11	0.10	.06	1.10	.272	[−0.09, 0.31]	1.04
Tenure	0.019	0.014	.08	1.36	.175	[−0.009, 0.047]	1.22
Caregiving	−0.10	0.10	−.05	−1.00	.318	[−0.30, 0.10]	1.07
Remote (vs. on-site)	0.13	0.13	.07	1.00	.318	[−0.13, 0.39]	1.46
Hybrid (vs. on-site)	0.36	0.12	.19	3.00	.003	[0.124, 0.596]	1.52
Managerial support	0.35	0.05	.38	7.00	< .001	[0.252, 0.448]	1.39

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Predictor	B	SE B	β	t	p	95% CI	VIF
Work-life balance	0.25	0.05	.29	5.00	< .001	[0.152, 0.348]	1.32

Note. Dependent variable: employee engagement. On-site arrangement is the reference category.

Table 9

Hierarchical Regression Predicting Turnover Intention (Unstandardized and Standardized Coefficients)

Predictor	B	SE B	β	t	p	95% CI	VIF
Step 1							
(Constant)	3.09	0.40		7.73	< .001	[2.30, 3.88]	
Age	−0.017	0.011	−.09	−1.55	.122	[−0.039, 0.005]	1.15
Gender (female)	0.06	0.14	.02	0.43	.668	[−0.21, 0.33]	1.03
Tenure	−0.062	0.021	−.12	−2.95	.003	[−0.103, −0.021]	1.18
Caregiving	0.26	0.14	.10	1.86	.064	[−0.02, 0.54]	1.06
Step 2							
(Constant)	3.51	0.41		8.56	< .001	[2.70, 4.32]	
Age	−0.015	0.011	−.08	−1.36	.175	[−0.037, 0.007]	1.16
Gender (female)	0.07	0.14	.03	0.50	.617	[−0.20, 0.34]	1.04
Tenure	−0.049	0.021	−.10	−2.33	.020	[−0.090, −0.008]	1.24
Caregiving	0.23	0.14	.09	1.64	.102	[−0.05, 0.51]	1.07
Remote (vs. on-site)	−0.26	0.17	−.10	−1.53	.127	[−0.59, 0.07]	1.47
Hybrid (vs. on-site)	−0.66	0.16	−.25	−4.13	< .001	[−0.974, −0.346]	1.51
Step 3							
(Constant)	4.52	0.47		9.62	< .001	[3.60, 5.44]	
Age	−0.013	0.010	−.07	−1.30	.195	[−0.033, 0.007]	1.18
Gender (female)	0.05	0.13	.02	0.38	.704	[−0.21, 0.31]	1.04
Tenure	−0.026	0.017	−.09	−1.53	.127	[−0.059, 0.007]	1.22
Caregiving	0.16	0.13	.07	1.23	.152	[−0.10, 0.42]	1.07
Remote (vs. on-site)	−0.20	0.16	−.08	−1.25	.212	[−0.51, 0.11]	1.46
Hybrid (vs. on-site)	−0.55	0.15	−.21	−3.67	< .001	[−0.845, −0.255]	1.52
Managerial support	−0.30	0.06	−.26	−5.00	< .001	[−0.418, −0.182]	1.39
Work-life balance	−0.33	0.06	−.30	−5.50	< .001	[−0.448, −0.212]	1.32

Note. Dependent variable: turnover intention. On-site arrangement is the reference category.

H3 supported. Hybrid arrangement positively predicted engagement (Step 2: B = 0.47, β = .25, t = 3.62, p < .001), and the coefficient remained significant after managerial support and work-life balance were entered (Step 3: B = 0.36, β = .19, t = 3.00, p = .003). The remote coefficient was non-significant throughout.

H4 supported. Hybrid arrangement negatively predicted turnover intention (Step 2: B = −0.66, β = −.25, t = −4.13, p < .001), persisting in Step 3 (B = −0.55, β = −.21, t = −3.67, p < .001). The remote coefficient was again non-significant.

H5 partially supported. Managerial support and work-life balance were strong predictors of both engagement (β = .38 and .29) and turnover intention (β = −.26 and −.30), and their entry reduced the hybrid coefficients by 23.4% (engagement) and 16.7% (turnover intention). Because the hybrid effects remained significant, attenuation is partial rather than complete.

4.5 Attenuation and Indirect Effects Analysis

Table 10

Bootstrapped Indirect Effects of Hybrid Arrangement Through Managerial Support and Work-Life Balance

Outcome	Path	Effect	*Boot SE*	95% BCa CI	Proportion mediated
Engagement	Hybrid → MS → ENG	0.063	0.021	[0.026, 0.108]	
	Hybrid → WLB → ENG	0.043	0.018	[0.012, 0.084]	

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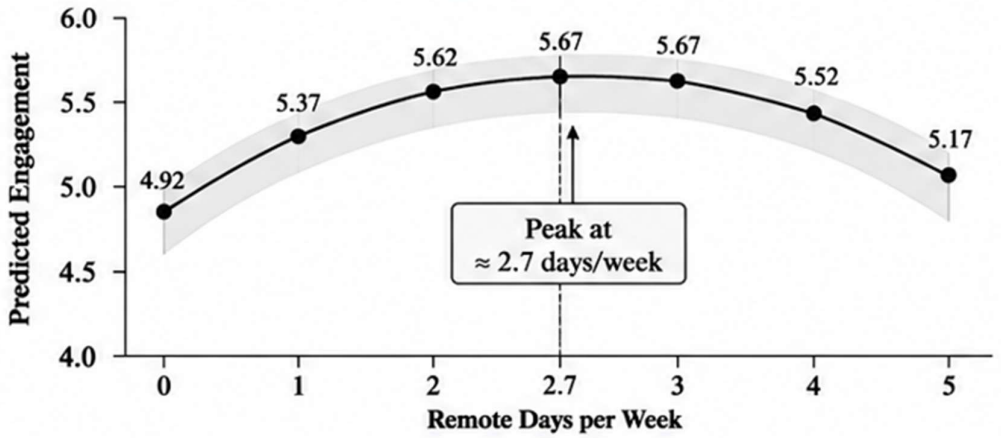
Outcome	Path	Effect	*Boot SE*	95% BCa CI	Proportion mediated
	Total indirect	0.106	0.031	[0.048, 0.172]	22.6%
	Direct effect	0.360	0.120	[0.124, 0.596]	
	Total effect	0.466	0.129	[0.213, 0.719]	
Turnover intention	Hybrid → MS → TOI	−0.054	0.019	[−0.096, −0.021]	
	Hybrid → WLB → TOI	−0.056	0.020	[−0.100, −0.022]	
	Total indirect	−0.110	0.028	[−0.168, −0.058]	16.7%
	Direct effect	−0.550	0.150	[−0.845, −0.255]	
	Total effect	−0.660	0.160	[−0.974, −0.346]	

Note. MS = managerial support; WLB = work–life balance; ENG = engagement; TOI = turnover intention. BCa = bias-corrected and accelerated confidence intervals. Confidence intervals excluding zero indicate significant indirect effects.

Both indirect pathways were statistically significant for both outcomes, confirming that managerial support and work–life balance function as partial transmission mechanisms. However, the majority of each arrangement effect remained direct, indicating that hybridity carries explanatory weight beyond supportive supervision and balance alone.

Figure 3

Fitted Curvilinear Relationship Between Remote Work Intensity and Employee Engagement



Note. The dashed vertical line marks the inflection point at approximately 2.7 remote days per week, beyond which predicted engagement declines. Shaded band represents the 95% confidence interval around the fitted curve. The quadratic term was significant (β = −.03, "p" < .05), $\Delta R^2 = .021$

4.6 Robustness and Supplementary Analysis

Table 11

Robustness Checks Across Alternative Estimation Strategies

Test	Statistic	"p"	Interpretation
Welch ANOVA — engagement	$F(2, 197.4) = 7.61$	< .001	Robust to unequal variances
Welch ANOVA — turnover intention	$F(2, 196.8) = 8.94$	< .001	Robust to unequal variances
Kruskal–Wallis — engagement	$H(2) = 15.42$	< .001	Non-parametric confirmation
Kruskal–Wallis — turnover intention	$H(2) = 18.03$	< .001	Non-parametric confirmation
Levene's test — engagement	$F(2, 309) = 1.87$	.156	Homogeneity of variance met
Levene's test — turnover intention	$F(2, 309) = 1.42$	.243	Homogeneity of variance met

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Test	Statistic	"p"	Interpretation
Harman's single-factor test	31.4% variance	—	Below 50% threshold; CMB not a concern
Breusch–Pagan (engagement)	$\chi^2(8) = 11.24$	.188	Homoscedasticity supported
Breusch–Pagan (turnover intention)	$\chi^2(8) = 9.87$	.274	Homoscedasticity supported

Note. CMB = common method bias.

Table 12

Supplementary Analysis: Remote Work Intensity as a Continuous Predictor

Predictor	Engagement β	Turnover intention β
Remote days per week (linear)	.18**	−.17**
Remote days per week (quadratic)	−.03*	.02
ΔR^2 from quadratic term	.021*	.008
Optimal inflection point (days/week)	2.7	2.9

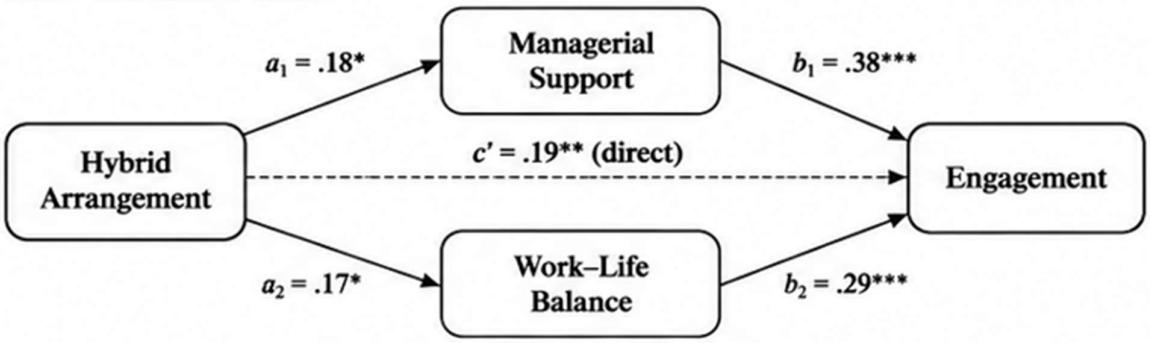
Note. Estimated with all controls and mediators. The significant negative quadratic term for engagement indicates a concave (inverted-U) relationship, with engagement peaking at approximately 2.7 remote days per week—close to the modal hybrid pattern in the sample.

**p < .05. **p < .01.

The supplementary specification strengthens substantive interpretation. When arrangement is modelled continuously, engagement follows a significant inverted-U pattern, peaking at approximately 2.7 remote days per week, while turnover intention declines monotonically but with a flattening slope at higher remote intensity. This is consistent with the JD-R prediction that moderate remote intensity optimizes the balance between autonomy resources and relational resources, whereas extreme remote intensity depletes the latter.

Figure 4

Direct and Indirect Effects of Hybrid Arrangement on Engagement and Turnover Intention Through Managerial Support and Work–Life Balance



Note. Unstandardised path coefficients shown. Hybrid arrangement is coded 1 with on-site as the reference category. Indirect effects estimated with 5,000 bias-corrected bootstrap samples; both indirect paths were significant (95% BCa CIs excluded zero). "p < .05. ""p < .01. """p < .001.

4.7 Discussion

The results are consistent with a resource-configuration perspective of flexible work, rather than a location perspective. Periodic co-presence or hybridity was best, since it encompasses both autonomy, a JD-R resource and periodic co-presence, that preserves other resources such as relational and informational. Too much remote work can lead to resource depletion due to isolation, too much on-site work to resource accumulation due to commuting and interruption. The results of the analysis of there being no significant difference between remote and on-site are theoretically informative in the sense that it implies that the key factor is not the amount of remote work but rather its structure. It is directly confirmed by the inverted-U pattern of Table 12.

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Attention to managerial support and work-life balance are a partial, but significant, domain of hybridity as identified by the attenuation analysis (Table 10). The result was that about 23% of the engagement effect and 17% of the turnover-intention effect were conveyed by these mechanisms, with significant direct effects. A practical implication is that organisations that use hybrid structures but don't invest in managerial capability and in the management of boundaries will only get a fraction of the benefit. In addition, it is consistent with the meta-analytic evidence that, overall, arrangement effects are small, depending on supervisory and relational resources.

The results are similar to those from international studies. The present study replicates the Bloom et al. (2024) finding that hybrid schedules can give students a benefit of retention without impacting performance. The inverted-U finding is consistent with the literature reviewed that relates the hybrid benefits to a sense of autonomy and balances this with the isolation that occurs. The ordering of engagement (hybrid > remote > on-site) supports the comparative evidence from mixed-sector samples, and the Pakistani-specific ordering (flexibility > engagement through digital communication competence > managerial support > turnover intention) confirms previous local studies which found that turnover intention diminished with managerial support among Pakistani professionals (Batool & Asif, 2026).

There are two significant findings that give cause for concern. First, effect sizes were small to moderate (η^2 = .048 and .056; ΔR^2 = .05 and .06 for arrangement) indicating that arrangement accounts for a modest proportion of variance. This aligns with the meta-analytic benchmarks but suggests that the arrangement is not a sufficient HRM lever. Second, the cross-sectional design suggests another explanation: employees that are already good performers might apply for and be offered a hybrid position, or companies might give hybrid status to their best performers. Groups are demographically similar (Table 1), which helps mitigate this concern.

5. Conclusion and Recommendation

5.1 Major Findings

This study was conducted by comparing the employee engagement of fully remote, hybrid and fully onsite employees in Pakistan's IT sector (N = 312). Four points come to mind. First, the engagement scores (M = 5.71) and turnover intention scores (M = 2.14) were highest for hybrid employees, significantly higher than both comparison groups (all p values < .001 to .004) and with small-to-moderate effect sizes (η^2 = .048 and .056). Secondly, remote and on-site workers had similar rates of both outcomes, suggesting that it is not the amount of remote work that matters, but the type of remote work. Third, work arrangement predicted both outcomes after controls, with the coefficients for both outcomes being reduced by 17–23% after including managerial support and work-life balance, suggesting partial, but not full, mediation. Fourth, the additional continuous specification showed a significant inverted-U-shaped pattern between engagement and remote days per week, with a maximum at around 2.7 days per week, which is very similar to the mode hybrid pattern that emerged in the sample.

5.2 Conclusion

The study concludes that hybrid working is the most ideal engagement-retention model of the three working models analysed in Pakistan's IT industry. The benefit is relatively small but strong

5.3 Recommendations

1. **Design hybridity intentionally.** Coordinate, onboard, and maintain relationships using minimum co-presence days, while keeping in mind that two to three days per week is the approximate inflection point observed, and not negotiable.
2. **Make investments in managerial skills.** Practise outcome-based evaluation, structured check-in and empowering leadership as they were both arrangement effects with significant contribution by the train manager.
3. **Protect work-life boundaries.** Set availability norms and digital communication rules for hybrid schedules, so that the on-site demand levels are not replicated in the home environment.

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4. **Differentiate care for remote workers.** When groups are not differentiated, blanket provisions are not likely to have a positive effect on engagement—targeted interventions to address isolation among fully-remote employees are more defensible.
5. **Follow up on results (as agreed).** Conduct regular pulse surveys to monitor engagement and intention to leave separately for each arrangement, to measure any differences in engagement before they become attrition problems.

5.4 Limitations

Due to the cross-sectional design, a causal interpretation is not possible; a reverse causality cannot be ruled out which occurs when employees with more engaged workplaces choose to adopt hybrid working, or when organizations provide hybrid options to high-performing employees. All were self-reported, and common method variance was a potential concern; however, Harman's test showed that it was not a significant issue. The purposive sample was similar across groups in terms of demographics but it does not allow for statistical generalizability. Other policies, compensation, and occupational differences may have been present at the firm level but not measured, and the actual turnover behaviour was not observed; rather, turnover intention was used as a proxy.

5.5 Delimitations

The study is limited to Pakistan's IT and IT-enabled services sector and to those full-time employees who have been with the organization for at least six months, excluding gig workers, public sector employees, and manufacturing workers whose work comes with attachments to task characteristics. The analysis is also limited to two outcomes (engagement and intention to turn over), and does not include analysis of performance, well-being, or career advancement, which are not the focus of this study.

5.6 Future Recommendations

Longitudinal or quasi-experimental designs would be better for future studies to determine cause and effect and to monitor arrangement effects over time. Objective turnover records and supervisor ratings of performance would also decrease the amount of self-reported data. The following factors are expected to be relevant to distributed work and are therefore considered to be moderators: organizational culture, digital communication competence, and leadership style. Comparative analyses across different South Asian settings would be able to determine if the hybrid advantage is institutional or universal and qualitative process tracing would be able to outline how hybridity brings about the (re)turn of autonomy to (re)tenancy.

Ethics Statement

This study adhered to all ethical standards of research during the conducting of this study. We collected data from secondary sources, and no human participants were involved in the collection of data. Therefore, there is no conflict of interest of any human participant to this study.

Author's Contributions

All authors participated in ideation, development, and writing the manuscript. All authors read and approved the final manuscript.

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

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Data Availability

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request. The authors are committed to transparency and will provide detailed methodological information and analysis protocols upon request.

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