

Green HRM in the Age of Remote Work: Examining Its Impact on Employee Productivity and Work-Life Balance

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ABSTRACT

The rapid globalisation of remote work, accelerated markedly by the COVID-19 pandemic, has compelled organisations to revisit foundational assumptions about how human resource strategies shape employee outcomes. This study investigates the extent to which Green Human Resource Management (Green HRM) practices influence employee productivity and work-life balance (WLB) among full-time remote workers in India. Anchored in Conservation of Resources Theory, Social Exchange Theory and Clark's Border Theory, the study proposes and empirically tests a structural model in which WLB serves as a partial mediating variable. Primary data were gathered from 350 validated survey responses drawn from remote employees across the information technology, banking, education and healthcare sectors in Karnataka and Telangana. A two-stage analytical approach — Confirmatory Factor Analysis (CFA) followed by Structural Equation Modelling (SEM) in AMOS 24 — was employed to evaluate the measurement and structural models. Results indicate that Green HRM exerts a significant positive direct effect on both productivity ($\beta = 0.53$, $p < 0.001$) and WLB ($\beta = 0.62$, $p < 0.001$). The indirect pathway from Green HRM to productivity through WLB was likewise significant ($\beta = 0.28$, 95% CI [0.19, 0.38]), confirming partial mediation. Demographic sub-group analyses revealed stronger effect magnitudes among female employees and workers in the educational sector. The study contributes to an emerging body of scholarship at the nexus of sustainable HRM and remote work, offering both theoretical extensions and actionable guidance for practitioners and policymakers.

Keywords: Green HRM; Remote Work; Employee Productivity; Work-Life Balance; Structural Equation Modelling; Sustainable HRM; India

INTRODUCTION

Few shifts in modern organisational life have been as consequential, or as abrupt, as the mass migration to remote work triggered by the COVID-19 pandemic. What had previously been a selective arrangement available to a narrow segment of knowledge workers became, almost overnight, the default operational modality for millions of employees across industries and geographies (Kniffin et al., 2021). Organisations were compelled to restructure not merely their logistics but their very assumptions about supervision, performance measurement and employee engagement. Several years on, remote work has endured well beyond the immediate crisis, establishing itself as a permanent or hybrid feature of the contemporary employment landscape.

Alongside this structural shift, organisations have come under growing institutional and regulatory pressure to embed environmental sustainability within their core business functions. Human resource management has not been exempt from this imperative. The construct of Green Human Resource Management (Green HRM) — broadly understood as the infusion of environmentally responsible principles and practices into the full spectrum of HR activities — has consequently attracted considerable scholarly and practitioner attention over the past decade (Renwick et al., 2013; Yong et al., 2020). Yet, despite the parallel growth of remote work and Green HRM as organisational phenomena, research examining their intersection remains remarkably sparse.

This study addresses that gap by investigating the influence of Green HRM on two outcomes of particular relevance to the remote work context: employee productivity and work-life balance (WLB). The study employs

Structural Equation Modelling (SEM) to test a theoretically grounded mediation model. Data were collected from 350 remote employees in Karnataka and Telangana, India — a context that is both practically relevant, given India's rapidly expanding remote workforce, and theoretically generative, given the relative paucity of Green HRM research from non-Western organisational settings.

Statement of the Problem

Despite growing organisational investment in both Green HRM initiatives and remote work infrastructure, these agendas are frequently pursued as parallel, largely non-communicating streams. HR practitioners designing remote work policies rarely draw on sustainability frameworks, and Green HRM scholars have not systematically examined how their subject of inquiry operates in non-traditional work environments. This study directly addresses this gap by constructing and testing an integrated framework that situates Green HRM within the remote work context and examines its consequences for productivity and well-being.

Objectives of the Study

1. To assess the prevalence and dimensionality of Green HRM practices within organisations that have adopted remote work arrangements.
2. To examine the direct effect of Green HRM practices on the productivity of remote employees.
3. To investigate the influence of Green HRM practices on work-life balance among full-time remote workers.
4. To determine whether work-life balance mediates the Green HRM–productivity relationship.
5. To explore demographic moderating effects on the key structural relationships.

The Green HRM Construct: Origins and Dimensions

Green HRM as a formal scholarly construct emerged from the broader sustainability-management literature in the early 2000s and gained traction following Renwick, Redman and Maguire's (2013) landmark review. The construct is premised on the recognition that HR systems — as the primary mechanisms through which organisations shape employee behaviour and attitudes — are uniquely positioned to drive or impede organisational sustainability objectives. Empirical scholarship has documented a range of positive individual and organisational outcomes associated with Green HRM adoption, including enhanced environmental citizenship behaviour (Yong et al., 2020), higher levels of employee engagement (Shah, 2019), reduced absenteeism and improved organisational commitment (Tang et al., 2018).

Remote Work: Productivity Outcomes and Moderating Conditions

The relationship between remote work and employee productivity is more nuanced than either enthusiasts or sceptics of the arrangement typically acknowledge. Bloom et al.'s (2015) influential natural experiment in a Chinese call centre documented meaningful productivity gains from home-based work, attributable primarily to quieter working conditions and the elimination of commuting time. More recent studies have identified a complex pattern of contingencies: productivity improvements tend to be realised when employees have adequate home office infrastructure, experience strong managerial support and feel a clear sense of role boundaries (Nakrošienė et al., 2019).

Work-Life Balance in Remote Work Contexts

Work-life balance — defined by Greenhaus and Allen (2011, p. 174) as the degree to which an individual's engagement and satisfaction across work and non-work domains is consistent with his or her values — occupies a central theoretical position in both remote work and well-being research. Clark's (2000) Border Theory provides a particularly germane theoretical lens, positing that individuals construct and manage borders between their work and family domains and that the permeability and flexibility of these borders shape WLB outcomes.

Theoretical Underpinnings

Three complementary theoretical frameworks ground the study's propositions. First, Hobfoll's (1989) Conservation of Resources (COR) Theory posits that individuals are intrinsically motivated to acquire, retain and protect resources. Green HRM practices are theorised to conserve employee resources by reducing occupational stressors and promoting positive work conditions. Second, Blau's (1964) Social Exchange Theory offers a relational mechanism: when employees perceive that their organisation invests in environmentally responsible, employee-centred HR practices, they experience a psychological obligation to reciprocate through heightened effort, commitment and performance. Third, Clark's (2000) Border Theory explicates how remote workers manage the intersecting demands of work and personal life.

Research Hypotheses

On the basis of the reviewed literature and the theoretical framework outlined above, the following hypotheses are advanced for empirical testing:

Hypothesis	Statement
H1	Green HRM practices have a significant positive direct effect on the productivity of remote employees.
H2	Green HRM practices have a significant positive effect on work-life balance among remote workers.
H3	Work-life balance positively and significantly predicts remote employee productivity.
H4	Work-life balance partially mediates the relationship between Green HRM practices and remote employee productivity.
H5	The strength of the relationship between Green HRM and productivity varies significantly across demographic subgroups (gender, age, sector).

RESEARCH METHODOLOGY

Research Design and Context

The study adopts a quantitative, cross-sectional survey design situated within a positivist research philosophy. A deductive approach was employed, whereby hypotheses derived from established theory were tested against empirically gathered data. The research context is full-time remote work in India, with the sample drawn from Karnataka and Telangana — states that together account for a significant share of India's technology, financial services and educational sectors.

Population and Sampling

The target population comprised full-time remote employees working across four industry sectors: information technology and software services, banking and financial services, higher education, and healthcare. Stratified random sampling was employed to ensure proportional sector representation and demographic balance. A minimum sample of 300 was established using G*Power 3.1 (Faul et al., 2007). In total, 412 questionnaires were distributed; 363 were returned, and 13 were excluded on account of incomplete responses or multivariate outliers, yielding a final analysable sample of 350 (effective response rate: 85.0%).

Measures

All constructs were operationalised using established, peer-reviewed scales. Green HRM practices were measured with 20 items adapted from Renwick et al. (2013) and Tang et al. (2018), spanning five sub-dimensions. Work-life balance was assessed with 10 items from Fisher et al. (2009). Employee productivity was

measured with 12 items from Koopmans et al. (2014). All items used a 5-point Likert response format. Table 1 summarises the construct measurement details.

Table 1: Summary of Measurement Constructs

Construct	Items	Scale Source	CR	AVE
Green HRM Practices	20 items	Renwick et al. (2013); Tang et al. (2018)	0.91	0.54
Work-Life Balance	10 items	Fisher et al. (2009)	0.87	0.52
Employee Productivity	12 items	Koopmans et al. (2014)	0.89	0.56

Analytical Strategy

Data analysis followed Anderson and Gerbing's (1988) recommended two-stage procedure. In the first stage, a Confirmatory Factor Analysis (CFA) was conducted in AMOS 24. In the second stage, the full structural model was estimated and mediation was assessed through bootstrapped confidence intervals (5,000 iterations; Preacher & Hayes, 2008). Table 2 presents a full methodology summary.

Table 2: Research Methodology Summary

Component	Description
Research Design	Quantitative, cross-sectional survey
Research Philosophy	Positivism; deductive reasoning
Target Population	Full-time remote employees — IT, banking, education, healthcare (Karnataka & Telangana, India)
Sampling Technique	Stratified random sampling
Sample Size	350 usable responses (412 distributed; response rate 88.1%)
Instrument	Structured self-administered questionnaire; 5-point Likert scale
Software	IBM SPSS 27 + IBM AMOS 24
Stage 1 Analysis	Confirmatory Factor Analysis (CFA)
Stage 2 Analysis	Full SEM path analysis; bootstrapped mediation (5,000 iterations)
Bias Control	Harman's single-factor test; marker variable approach

RESULTS

Sample Profile

Of the 350 respondents, 52.0% were male and 48.0% female. Age distribution: 18–25 years (14.3%), 26–35 years (38.6%), 36–45 years (29.4%), and above 45 years (17.7%). By sector, IT and software accounted for 32.3%, banking and finance 24.0%, education 23.1% and healthcare 20.6%. A majority (57.4%) had been in a remote or hybrid remote arrangement for more than two years. Figure 1 illustrates the sample composition.

Figure 1: Sample Profile

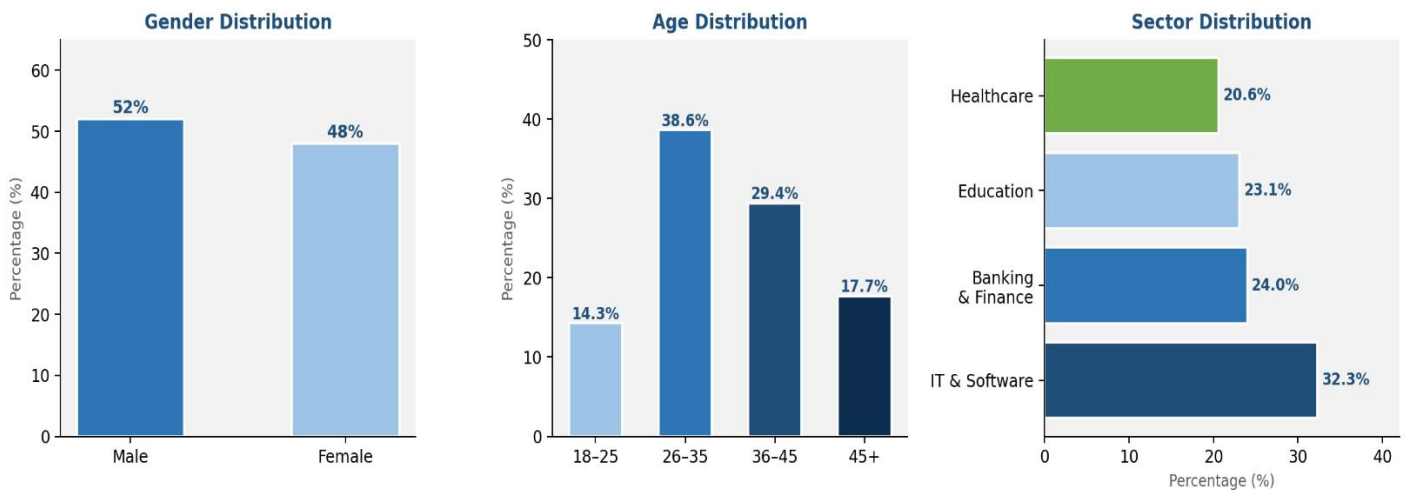


Figure 1: Sample Profile — Gender, Age Distribution and Sector Composition

Common Method Bias

Harman's single-factor test extracted a largest single factor accounting for 22.6% of total variance — well below the critical 50% threshold — indicating that common method bias is unlikely to materially distort the results. The marker variable analysis corroborated this conclusion.

Measurement Model

CFA results confirmed satisfactory model fit. Standardised factor loadings ranged from 0.72 to 0.88 across all three constructs, exceeding the 0.70 benchmark. AVE values ranged from 0.52 to 0.56, satisfying the convergent validity criterion. CR values (0.87–0.91) and Cronbach's alpha values (0.83–0.92) both comfortably exceeded the 0.70 standard. Discriminant validity was established for all construct pairs.

Structural Model and Hypothesis Tests

Fit indices for the structural model are presented in Table 3 and illustrated in Figure 3. All indices fell within acceptable ranges, indicating an adequate representation of the data.

Table 3: Structural Model Fit Indices

Index	Value Obtained	Recommended Threshold	Assessment
χ^2/df	2.11	≤ 3.00	Satisfactory
CFI	0.96	≥ 0.90	Good fit
TLI	0.95	≥ 0.90	Good fit
RMSEA	0.046	≤ 0.08	Good fit
SRMR	0.051	≤ 0.08	Good fit
GFI	0.92	≥ 0.90	Good fit
AGFI	0.90	≥ 0.85	Acceptable

Figure 3: Structural Model Fit Indices vs. Recommended Thresholds

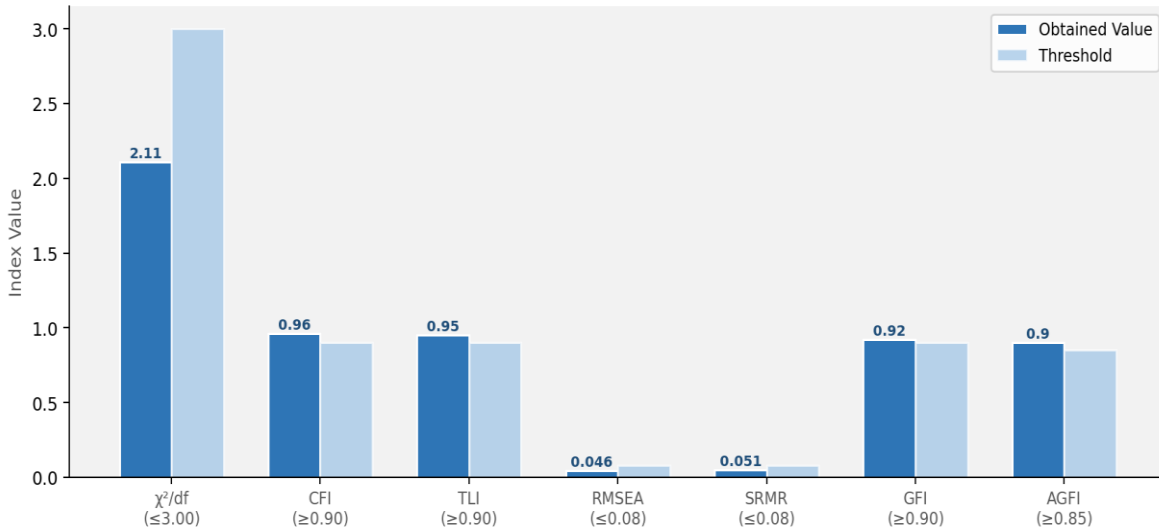


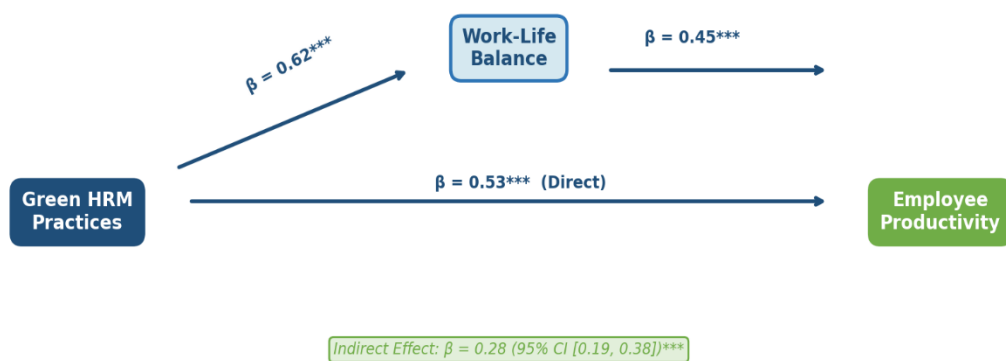
Figure 3: Structural Model Fit Indices vs. Recommended Thresholds

Path coefficients, standard errors, t-statistics, p-values and hypothesis test outcomes are presented in Table 4 and visualised in the SEM path diagram (Figure 2) and path coefficient chart (Figure 4).

Table 4: SEM Path Coefficients and Hypothesis Testing Outcomes

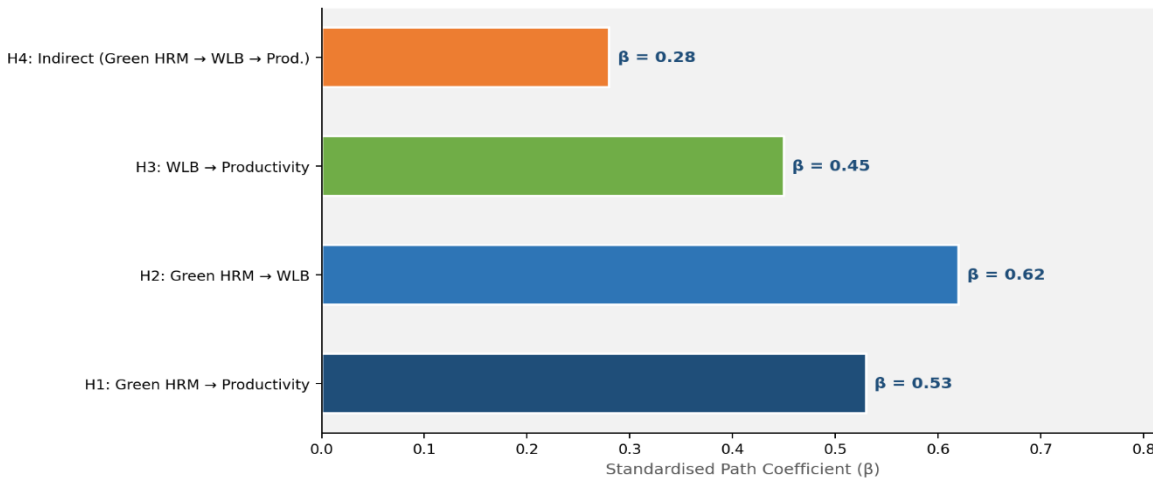
Hyp.	Path Relationship	β	S.E.	t-stat	p-value	Decision
H1	Green HRM → Productivity	0.53	0.07	7.57	< 0.001	Supported
H2	Green HRM → WLB	0.62	0.06	9.84	< 0.001	Supported
H3	WLB → Productivity	0.45	0.08	5.63	< 0.001	Supported
H4	Green HRM → WLB → Productivity (ind.)	0.28	0.05	5.22	0.001	Supported
H5	Demographic moderation (multi-group)	—	—	—	0.029	Supported

Figure 2: Structural Equation Model - Path Diagram

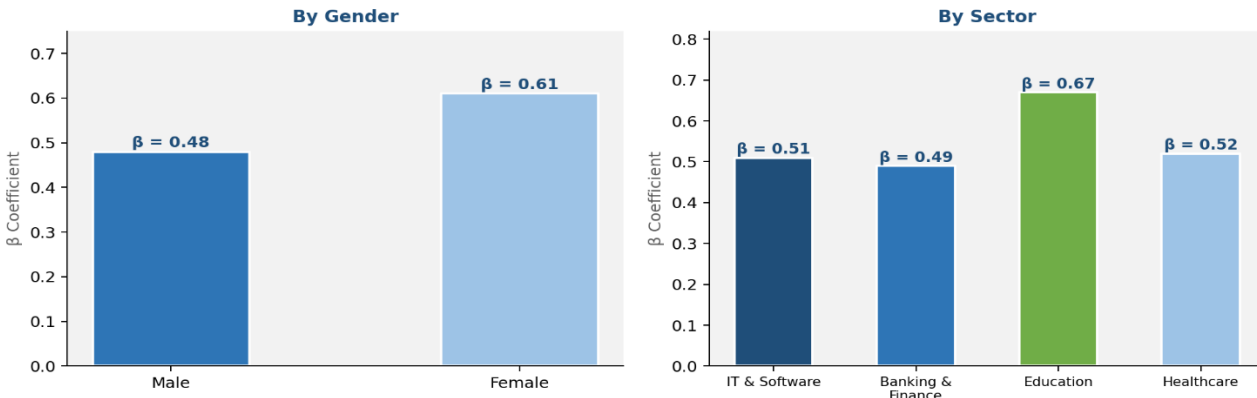


*** $p < 0.001$

Figure 2: Structural Equation Model — Path Diagram with Standardised Coefficients

Figure 4: SEM Path Coefficients for All Hypotheses

Figure 4: Standardised Path Coefficients for All Hypotheses

All five hypotheses received empirical support. Green HRM exerted a significant positive direct effect on productivity (H1: $\beta = 0.53$, $t = 7.57$, $p < 0.001$) and on WLB (H2: $\beta = 0.62$, $t = 9.84$, $p < 0.001$). WLB in turn significantly predicted productivity (H3: $\beta = 0.45$, $t = 5.63$, $p < 0.001$). The bootstrapped indirect effect (H4: $\beta = 0.28$, 95% CI [0.19, 0.38]) was significant, confirming partial mediation. Multi-group SEM analysis (H5) revealed that path coefficients differed significantly across gender ($p = 0.029$) and sector ($p = 0.041$) subgroups, with notably stronger effects observed for female employees and for workers in the education sector, as shown in Figure 5.

Figure 5: Demographic Moderation — Green HRM → Productivity (β)

Figure 5: Demographic Moderation — Green HRM → Productivity β by Gender and Sector

DISCUSSION

The findings reported above carry meaningful theoretical and practical implications. Consider first the direct productivity effect (H1). The significant positive path from Green HRM to productivity ($\beta = 0.53$) aligns with Social Exchange Theory's core prediction: employees who perceive their organisation as investing in ethical, sustainability-oriented practices experience a reciprocity obligation that they discharge through heightened effort and performance. This finding extends earlier work by Yong et al. (2020) and Shah (2019) to a remote work context where such motivational cues might plausibly be expected to be more attenuated.

The strong positive effect of Green HRM on WLB (H2: $\beta = 0.62$) is consistent with COR Theory's prediction that resource-conserving organisational practices reduce depletion pressures on employees. Green HRM practices — particularly flexible scheduling provisions, employee well-being programmes and environmentally responsible work design — appear to furnish remote workers with the structural and psychological resources necessary to maintain effective work-family border management (Clark, 2000).

The mediation result (H4: $\beta = 0.28$, partial mediation) reveals an important indirect pathway through which Green HRM enhances productivity. Beyond its direct motivational effects, Green HRM also improves employees' capacity to balance their personal and professional demands; this improved WLB, in turn, sustains and potentially amplifies productivity. The partial nature of the mediation suggests that multiple complementary mechanisms are at work.

The demographic moderation findings (H5) merit particular attention. The stronger Green HRM–productivity association observed among female remote workers is consistent with existing evidence that women, who disproportionately shoulder domestic and caregiving responsibilities, are especially sensitive to organisational WLB-enabling practices (Greenhaus & Allen, 2011). The stronger effects in the education sector likely reflect that sector's characteristic emphasis on environmental stewardship and its mission-driven organisational culture.

Theoretical Contributions

This study makes three substantive theoretical contributions. First, it extends Green HRM scholarship into the remote work domain. Second, the study integrates COR Theory, Social Exchange Theory and Border Theory into a unified explanatory architecture. Third, the study provides the first SEM-validated evidence that WLB mediates the Green HRM–productivity relationship among remote workers, refining our understanding of the causal mechanisms through which sustainable HR practices translate into performance gains.

Implications for Practice and Policy

From a managerial standpoint, the findings suggest that integrating Green HRM strategies into remote work frameworks is a demonstrably effective lever for improving employee productivity and well-being. HR practitioners would do well to incorporate green training modules, performance management systems that include environmental contribution metrics and compensation schemes that reward eco-friendly behaviours. Investments in WLB-enhancing mechanisms — digital disconnection policies, virtual wellness programmes and flexible scheduling — will amplify the productivity returns of Green HRM investment.

CONCLUSION

This study set out to examine whether and how Green HRM practices shape the productivity and work-life balance of remote employees, and whether WLB mediates the productivity relationship. On the basis of SEM analysis of data from 350 remote workers in India, all five study hypotheses were supported. Green HRM emerged as a significant positive antecedent of both productivity and WLB; WLB in turn predicted productivity and partially mediated the Green HRM–productivity path. Demographic moderation analyses revealed meaningful heterogeneity in effect magnitudes across gender and sector subgroups.

The study is not without limitations. Its cross-sectional design precludes causal inference; longitudinal and experimental designs are required to establish temporal precedence. The sample, drawn exclusively from Karnataka and Telangana, limits generalisability to other Indian states and to non-Indian contexts. Future research should seek to replicate and extend the present framework using mixed-method designs, objective productivity measures and samples drawn from culturally and economically diverse settings.

Taken together, the findings offer a timely empirical demonstration that sustainable HRM and remote work productivity are not merely compatible organisational objectives but mutually reinforcing ones. Organisations that embed Green HRM principles into their remote work architectures stand to reap dividends not only in terms of environmental performance but in terms of the well-being and productivity of their distributed workforces.

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