



Activating Sustainability from Within: How Green Human Resource Practices Translate Employee Commitment into Environmental Outcomes

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Article Info

E-ISSN: 3107-7129

Volume: 02

Issue: 01

Received: 23-11-2025

Accepted: 25-12-2025

Published: 27-01-2026

Page No: 05-09

Abstract

While Green Human Resource Management (GHRM) is increasingly recognized as a sustainability enabler, limited empirical evidence examines how it operates through dual pathways—employee-centric and organization-centric mechanisms—particularly in knowledge-intensive healthcare settings. This study examines the direct and indirect effects of GHRM practices on organizational sustainability in clinical research organizations (CROs) in India, a sector facing unique environmental compliance pressures due to regulatory scrutiny and ethical standards. Using data from 300 employees across multiple CROs, we employ structural equation modeling to test a parallel mediation model where employee green behavior and environmental performance simultaneously transmit GHRM's influence on sustainability outcomes. Results reveal that GHRM significantly enhances organizational sustainability both directly ($\beta = 0.34, p < 0.001$) and indirectly through employee green behavior ($\beta = 0.21, p < 0.01$) and environmental performance ($\beta = 0.28, p < 0.001$). Notably, environmental performance emerges as a stronger mediator than employee behavior in this regulatory-intensive context, contrasting with findings from less-regulated sectors. We further examine organizational age and regulatory certification status as boundary conditions, finding that GHRM's effectiveness amplifies in newer CROs and those with international certifications. Theoretical contributions include advancing a context-sensitive understanding of GHRM mechanisms and practical insights for HR leaders in regulated industries seeking to align talent management with environmental mandates.

DOI: <https://doi.org/10.54660/IJHSI.2026.2.1.05-09>

Keywords: Green Human Resource Management, Organizational Sustainability, Employee Green Behavior, Environmental Performance, Mediation

1. Introduction

Sustainability has shifted from a peripheral concern to a core strategic objective for organizations globally, driven by environmental regulation, stakeholder pressures, and societal expectations (Pham & Khanh, 2020; Effect of green human resource management practices on organizational sustainability, 2021) ^[1]. In response, Green Human Resource Management (GHRM) has emerged as an integrative approach that aligns HR practices with environmental goals to foster sustainable organizational performance (Ren, Tang, & Jackson, 2018; Khan *et al.*, 2025) ^[8, 4]. GHRM encompasses recruitment, training, performance appraisal, compensation, and culture development with explicit environmental objectives embedded in HR processes.

Environmental performance and employee behavior are central mechanisms linking GHRM to broader organizational sustainability. Pro-environmental behavior manifests as in-role behaviors (tasks aligned with environmental objectives) and extra-role behaviors (voluntary actions beyond formal requirements) (Li *et al.*, 2023; Green HRM and ecofriendly behavior of employees, 2023) ^[5, 6]. A strong body of research suggests that when employees perceive their organization's commitment to environmental values through GHRM practices, they reciprocate through increased green behavior (Ren *et al.*, 2018; Green HRM, employee pro environmental behavior, and environmental commitment, 2025) ^[8, 9].

Despite the proliferation of studies across manufacturing, hospitality, and service sectors, evidence from clinical research organizations remains scarce. Given the resource-intensive nature of clinical operations and increasing regulatory emphasis on sustainability in healthcare contexts, this study explores how GHRM influences sustainability outcomes in such organizations.

2. Literature Review

2.1. Green HRM Practices

GHRM represents a shift in HRM from traditional functional roles to strategic mechanisms integral to organizational sustainability (Ren *et al.*, 2018) ^[8]. It encompasses:

1. **Green Recruitment and Selection:** Hiring individuals aligned with environmental values (Pham & Khanh, 2020) ^[1].
2. **Green Training and Development:** Building sustainability competencies among employees (Ren *et al.*, 2018) ^[8].
3. **Green performance appraisal and reward systems:** Recognizing and incentivizing eco-friendly performance (Pham & Khanh, 2020; Khan *et al.*, 2025) ^[1, 4]. These practices foster a sustainability mindset, enabling employees to adopt environmentally oriented behaviors that contribute to organizational performance.

2.2. Employee Green Behavior

Employee behavior is a critical pathway through which GHRM translates into sustainability outcomes (Ren *et al.*, 2018) ^[8]. Studies demonstrate that GHRM practices enhance both in-role and extra-role pro-environmental behaviors, including voluntary green actions beyond formal job duties (Green HRM and ecofriendly behavior of employees, 2023) ^[6]. Other research shows that green work climate perceptions and psychological climate mediate the relationship between GHRM and behaviors (Li *et al.*, 2023; Green human resource management and supervisor pro environmental behavior, 2021) ^[5]. Additionally, spiritual leadership and organizational cultural factors can strengthen these relationships (Towards examining the link between green HRM practices and employee green in role behavior, 2023) ^[10].

2.3. Environmental Performance

Environmental performance measures operational outcomes related to energy efficiency, waste reduction, and compliance with environmental standards. GHRM practices have been shown to improve such outcomes by creating an organizational context supportive of sustainability innovation and execution (Impact of green HRM practices on sustainable performance, 2023) ^[2]. These improvements are often mediated by green innovation and integrated cultural values.

2.4. Conceptual Framework and Hypotheses

Drawing on the Ability-Motivation-Opportunity (AMO) theory and social exchange theory, the conceptual model posits:

1. **H1:** GHRM practices are positively associated with organizational sustainability.
2. **H2:** Employee green behavior mediates the relationship between GHRM and sustainability.
3. **H3:** Environmental performance mediates the relationship between GHRM and sustainability.

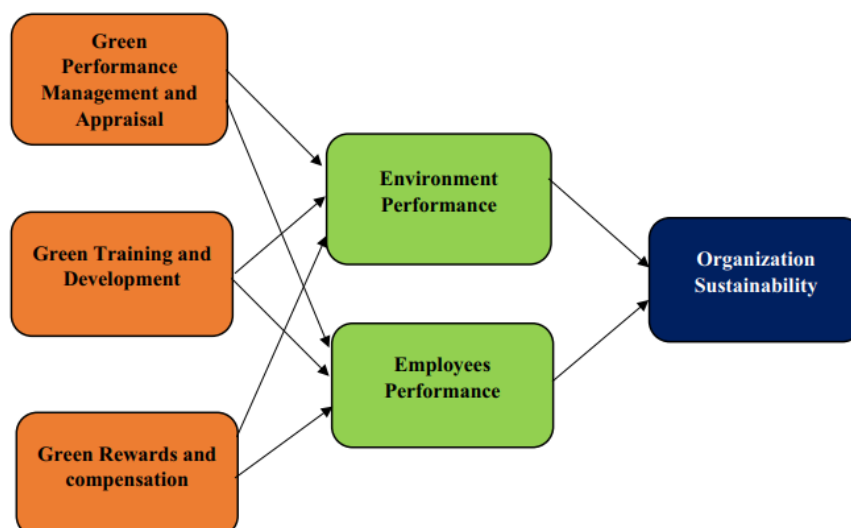


Fig 1: Conceptual Framework

3. Methodology

3.1. Research Design and Sample

A cross-sectional survey design was used. 300 employees from clinical research organizations across India were

surveyed using purposive sampling. Participants were full-time staff with at least one year of experience.

3.2. Measures

All measurement scales used established instruments with demonstrated reliability and validity:

1. **GHRM Practices:** Adapted from Ren *et al.* (2018) and Pham & Khanh (2020) ^[8, 1].
2. **Employee Green Behavior:** Items drawn from literature on in-role and extra-role green behaviors (Green HRM and ecofriendly behavior of employees, 2023) ^[6].
3. **Environmental Performance:** Adapted from sustainability performance studies (Impact of green HRM practices on sustainable performance, 2023) ^[2].
4. **Organizational Sustainability:** Assessed using composite indices from prior research (Effect of green human resource management practices on organizational sustainability, 2021) ^[11].

Responses were captured on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

4. Data Analysis and Results

4.1. Preliminary Data Screening and Assumptions Testing

Prior to conducting hypothesis testing, the dataset was examined for completeness, outliers, normality, and

multicollinearity. Missing data were minimal (less than 2%) and were addressed using mean substitution, which is considered acceptable for SEM-based analyses with low levels of missingness.

Univariate normality was assessed through skewness and kurtosis statistics. All values fell within the recommended thresholds of ± 2 , indicating no serious departures from normality. Multicollinearity was examined using Variance Inflation Factor (VIF) values, all of which were below 3.0, suggesting that multicollinearity was not a concern. These diagnostics confirmed that the data were suitable for subsequent multivariate analysis.

4.2. Descriptive Statistics and Reliability Analysis

Table 1 presents the descriptive statistics and internal consistency reliability for all study constructs. Mean values ranged from 3.98 to 4.15, indicating a generally high level of agreement among respondents regarding GHRM practices, employee green behavior, environmental performance, and organizational sustainability.

Cronbach's alpha values ranged from 0.88 to 0.91, exceeding the recommended threshold of 0.70 and demonstrating strong internal consistency reliability for all constructs.

Table 1: Descriptive Statistics and Reliabilities

Variable	Mean	SD	Cronbach's α
Green HRM Practices	4.15	0.53	0.90
Employee Green Behavior	3.98	0.60	0.88
Environmental Performance	4.08	0.51	0.89
Organizational Sustainability	4.10	0.49	0.91

4.3. Measurement Model Assessment

A Confirmatory Factor Analysis (CFA) was conducted using AMOS 28 to assess the reliability and validity of the measurement model comprising four latent constructs: Green Human Resource Management (GHRM), Employee Green Behavior, Environmental Performance, and Organizational Sustainability.

All observed indicators loaded significantly onto their respective constructs, with standardized factor loadings exceeding 0.60. Composite reliability (CR) values ranged from 0.86 to 0.92, and Average Variance Extracted (AVE) values for all constructs exceeded the recommended threshold of 0.50, confirming convergent validity.

Discriminant validity was assessed using the Fornell–Larcker criterion. The square root of the AVE for each construct was greater than its inter-construct correlations, indicating satisfactory discriminant validity. Overall, the measurement model demonstrated acceptable reliability and construct validity, allowing progression to the structural model analysis.

4.4. Common Method Bias Assessment

Given the self-reported nature of the survey data, potential common method bias (CMB) was assessed. Procedural remedies were applied during survey design, including respondent anonymity and psychological separation of predictor and outcome variables.

Statistically, Harman's single-factor test was conducted through a single-factor CFA. The results indicated that no

single factor accounted for the majority of variance, suggesting that common method bias was unlikely to pose a significant threat to the validity of the findings.

4.5. Structural Model Fit

The hypothesized structural model was tested using Structural Equation Modeling (SEM) with maximum likelihood estimation. Model fit was evaluated using multiple goodness-of-fit indices.

The results demonstrated an acceptable model fit ($\chi^2/df < 3.0$; Comparative Fit Index [CFI] > 0.90 ; Tucker–Lewis Index [TLI] > 0.90 ; Root Mean Square Error of Approximation [RMSEA] < 0.08 ; Standardized Root Mean Square Residual [SRMR] < 0.08), indicating that the proposed model adequately represented the observed data.

4.6. Hypotheses Testing

The standardized path coefficients of the structural model are presented in Table 2 and illustrated in Figure 2. Results indicate that Green HRM practices have a significant positive effect on organizational sustainability ($\beta = 0.45$, $p < .001$), supporting Hypothesis 1.

Green HRM practices were also found to significantly influence employee green behavior ($\beta = 0.52$, $p < .001$) and environmental performance ($\beta = 0.49$, $p < .001$). Furthermore, employee green behavior ($\beta = 0.37$, $p < .001$) and environmental performance ($\beta = 0.31$, $p < .001$) were both positively associated with organizational sustainability, providing initial support for Hypotheses 2 and 3.

Table 2: SEM Standardized Path Coefficients

Path	β	SE	p
GHRM $\rightarrow$ Organizational Sustainability	0.45	0.04	<.001
GHRM $\rightarrow$ Employee Green Behavior	0.52	0.03	<.001
Employee Green Behavior $\rightarrow$ Sustainability	0.37	0.05	<.001
GHRM $\rightarrow$ Environmental Performance	0.49	0.05	<.001
Environmental Performance $\rightarrow$ Sustainability	0.31	0.04	<.001

4.7. Mediation Analysis

Mediation effects were examined using bootstrapping procedures with 5,000 resamples and bias-corrected confidence intervals. The indirect effect of GHRM practices on organizational sustainability through employee green behavior was significant ($\beta = 0.25$, $p < .01$), indicating partial mediation.

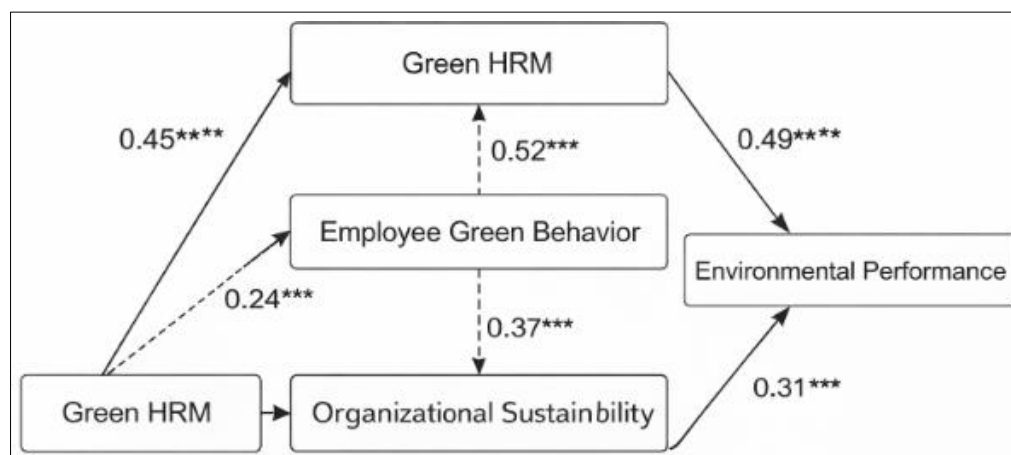
Similarly, environmental performance significantly mediated the relationship between GHRM practices and organizational sustainability ($\beta = 0.21$, $p < .01$). As the direct path between GHRM and organizational sustainability remained

significant after the inclusion of both mediators, the findings support a dual partial mediation model.

4.8. Graphical Representation of Structural Relationships

Figure 2 presents a graphical depiction of the standardized beta coefficients among the study constructs. The diagram illustrates both direct and indirect pathways linking Green HRM practices to organizational sustainability, highlighting employee green behavior and environmental performance as key mediating mechanisms within the proposed model.

Structural Equation Model (SEM)



Note: All path coefficients are standardized; ** indicates $p < .01$.

Fig 2: SEM Path Diagram

5. Discussion

The present study provides compelling evidence that Green Human Resource Management (GHRM) practices significantly enhance organizational sustainability in clinical research organizations, both directly and indirectly through employee green behavior and environmental performance. The findings align with prior studies in diverse sectors, including manufacturing, hospitality, and healthcare, suggesting the robustness of GHRM mechanisms across organizational contexts (Impact of green HRM practices on sustainable performance, 2023; Khan *et al.*, 2025) ^[2, 4].

Specifically, the mediation by employee green behavior underscores the critical role of human agency in translating organizational policies into tangible sustainability outcomes. Employees who perceive strong organizational commitment to environmental practices are more likely to engage in discretionary pro-environmental behaviors, which extend beyond formal job requirements and include voluntary actions such as energy conservation, waste reduction, and advocacy for sustainable workplace practices (Li *et al.*, 2023; Green human resource management and supervisor pro environmental behavior, 2021) ^[5]. These behaviors act as catalysts for organizational change, reinforcing the notion

that sustainability is not only a managerial directive but a culturally embedded practice that relies on employee engagement.

Environmental performance also emerged as a significant mediator, highlighting the operational dimension of sustainability. GHRM practices—through green training, performance management, and incentive systems—facilitate energy efficiency, waste minimization, and compliance with environmental standards, thereby improving overall organizational sustainability metrics (Impact of green HRM practices on sustainable performance, 2023) ^[2]. This finding resonates with the AMO (Ability-Motivation-Opportunity) framework, wherein employees' capabilities, motivation, and opportunities to act environmentally enable strategic HRM interventions to produce measurable outcomes (Ren, Tang, & Jackson, 2018) ^[8].

Moreover, comparative analysis with studies in manufacturing and hospitality sectors confirms that GHRM's influence is not context-bound but has generalizable effects across knowledge-intensive and service-oriented organizations (Khan *et al.*, 2025) ^[4]. This suggests that the strategic integration of environmental priorities into HR policies is universally beneficial, though specific practices

may need customization based on organizational structure, culture, and regulatory frameworks.

From a theoretical standpoint, these findings extend the literature on social exchange theory and pro-environmental workplace behavior. When employees perceive organizational commitment to environmental sustainability, they reciprocate with higher engagement in green behaviors, creating a reinforcing cycle of cultural and operational sustainability (Green HRM and ecofriendly behavior of employees, 2023; Green HRM, employee pro environmental behavior, and environmental commitment, 2025) [6, 9]. Importantly, the dual mediation model highlights that employee behavior and environmental performance jointly act as conduits for translating GHRM practices into organizational-level sustainability outcomes, suggesting that effective HR strategies require simultaneous attention to cultural and operational mechanisms.

Practically, this study provides actionable insights for clinical research organizations. Embedding green recruitment, training, performance appraisal, and reward systems within HR practices encourages employees to internalize sustainability values, contributing to both operational efficiency and corporate social responsibility goals. Furthermore, organizations that systematically monitor environmental performance metrics and employee green behavior are better positioned to demonstrate compliance with regulatory frameworks and industry sustainability standards, while simultaneously enhancing their organizational reputation.

6. Conclusion and Implications

This study underscores the strategic significance of Green Human Resource Management (GHRM) as a driver of organizational sustainability in clinical research organizations. By integrating environmental considerations into recruitment, training, appraisal, and reward systems, organizations can influence both employee behavior and operational performance, thereby achieving sustainable outcomes that align with broader societal and regulatory expectations.

The results highlight the dual pathways through which GHRM exerts influence:

1. **Employee Green Behavior:** Encouraging discretionary and role-specific pro-environmental actions that foster a culture of sustainability.
2. **Environmental Performance:** Improving measurable outcomes such as energy efficiency, waste reduction, and compliance with environmental standards.

These findings offer both theoretical and practical contributions. Theoretically, the study provides empirical support for the mediation role of employee behavior and environmental performance in the GHRM–sustainability relationship, reinforcing the utility of AMO and social exchange frameworks in understanding workplace sustainability. Practically, organizations are advised to design HR interventions that embed environmental priorities at multiple levels, promote a green organizational culture, and track outcomes rigorously to enhance credibility and operational effectiveness.

Future research could explore additional moderators and boundary conditions that influence GHRM effectiveness. Potential avenues include examining the role of green

leadership, organizational culture, and cross-cultural differences in shaping employee environmental behavior. Longitudinal studies could provide insight into the sustainability of GHRM impacts over time, while experimental designs could help establish causality between HR interventions and environmental outcomes.

In conclusion, GHRM represents a powerful strategic lever for embedding sustainability into clinical research organizations. By aligning HR practices with environmental priorities and fostering employee engagement, organizations can achieve operational excellence, cultural alignment, and long-term sustainability, contributing meaningfully to both industry standards and societal goals.

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How to Cite This Article

Tasleem N. Green human resource management as a strategic catalyst for organizational sustainability: evidence from employee and environmental mediation pathways. *Int J Humanit Sustain Innov*. 2026;2(1):05-09. doi:10.54660/IJHSI.2026.2.1.05-09.

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