

The Impact of Green Human Resource Management on Organizational Environmental Performance: The Mediating Role of Employee Pro-Environmental Behavior

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Abstract:

This study examines the impact of Green Human Resource Management (GHRM) on organizational environmental performance, with employee pro-environmental behavior as a mediating variable, in the context of PT Surabaya Industrial Estate Rungkut (SIER). A quantitative approach was employed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with a sample of 80 employees. Data were collected through structured questionnaires and analyzed to assess both direct and indirect relationships among variables. The results indicate that GHRM has a positive and significant effect on organizational environmental performance and significantly influences employee pro-environmental behavior. Furthermore, employee pro-environmental behavior is found to have a positive effect on environmental performance and partially mediates the relationship between GHRM and organizational outcomes. This study contributes theoretically by integrating organizational practices and individual behavioral mechanisms into a comprehensive model of environmental performance, particularly within an industrial context in a developing country. Practically, the findings suggest that organizations should enhance sustainability outcomes by strengthening GHRM practices and fostering employee engagement in pro-environmental activities. The study is limited by its sample size and single organizational focus; therefore, future research is recommended to include broader contexts and additional variables. Overall, this research highlights the importance of aligning human resource strategies with environmental objectives to achieve sustainable organizational performance.

Keywords: *green human resource management, environmental performance, pro-environmental behavior, SEM-PLS, sustainability.*

Abstrak:

Studi ini meneliti dampak Manajemen Sumber Daya Manusia Hijau (GRM) terhadap kinerja lingkungan organisasi, dengan perilaku pro-lingkungan karyawan sebagai variabel mediasi, dalam konteks PT Surabaya Industrial Estate Rungkut (SIER). Pendekatan kuantitatif digunakan dengan menggunakan Structural Equation Modeling–Partial Least Squares (SEM-PLS) dengan sampel 80 karyawan. Data dikumpulkan melalui kuesioner terstruktur dan dianalisis untuk menilai hubungan

langsung dan tidak langsung antar variabel. Hasil menunjukkan bahwa GRM memiliki pengaruh positif dan signifikan terhadap kinerja lingkungan organisasi dan secara signifikan mempengaruhi perilaku pro-lingkungan karyawan. Lebih lanjut, perilaku pro-lingkungan karyawan ditemukan memiliki pengaruh positif terhadap kinerja lingkungan dan sebagian memediasi hubungan antara GRM dan hasil organisasi. Studi ini memberikan kontribusi teoritis dengan mengintegrasikan praktik organisasi dan mekanisme perilaku individu ke dalam model kinerja lingkungan yang komprehensif, khususnya dalam konteks industri di negara berkembang. Secara praktis, temuan menunjukkan bahwa organisasi harus meningkatkan hasil keberlanjutan dengan memperkuat praktik GRM dan mendorong keterlibatan karyawan dalam kegiatan pro-lingkungan. Studi ini terbatas oleh ukuran sampel dan fokus organisasi tunggal; oleh karena itu, penelitian selanjutnya disarankan untuk mencakup konteks yang lebih luas dan variabel tambahan. Secara keseluruhan, penelitian ini menyoroti pentingnya menyelaraskan strategi sumber daya manusia dengan tujuan lingkungan untuk mencapai kinerja organisasi yang berkelanjutan.

Kata Kunci: *manajemen sumber daya manusia hijau, kinerja lingkungan, perilaku pro-lingkungan, SEM-PLS, keberlanjutan.*

INTRODUCTION

Environmental sustainability has become a critical issue in modern society, driven by increasing ecological degradation and climate change challenges (Nguyen, et al., 2023). Point: Organizations are expected to play a proactive role in reducing environmental impacts through sustainable practices (Hariram, et al., 2023). Reason: Industrial activities significantly contribute to pollution, resource depletion, and environmental damage, making corporate responsibility essential (Telo da Gama, 2023). Evidence: Global reports indicate that industries account for a large proportion of carbon emissions and environmental degradation, highlighting the urgency for sustainable organizational practices (Humbal, et al., 2023). Conclusion: Therefore, integrating environmental considerations into organizational management systems is crucial (Yang, et al., 2023). This study is important because it examines how Green Human Resource Management (GHRM) can enhance organizational environmental performance, particularly by influencing employee behavior (Chen, et al., 2023). By focusing on the mediating role of employee pro-environmental behavior, this research provides insights into how internal organizational mechanisms contribute to broader environmental sustainability goals (Henderson, et al., 2023).

A major problem faced by society is the gap between environmental awareness and actual implementation of sustainable practices within organizations (Kabir, et al., 2023). Many companies have adopted environmental policies; however, these policies often fail to translate into consistent employee behavior (Saxena, 2025). In industrial areas such as PT Surabaya Industrial Estate Rungkut (SIER), environmental management initiatives are present, yet challenges remain in ensuring active employee participation (Bhatti, et al., 2024). Field phenomena indicate that while environmental regulations and systems are established, employees may lack motivation, awareness, or engagement to practice environmentally responsible behaviors in daily operations (Adebayo, 2025). This results in suboptimal environmental performance despite organizational efforts (Lu, & Wang, 2023).

Such conditions highlight the importance of aligning human resource practices with environmental objectives to ensure that sustainability initiatives are effectively implemented at all levels of the organization (Ma, et al., 2023).

Previous studies have explored the relationship between Green Human Resource Management and organizational environmental performance, demonstrating that GHRM practices such as green recruitment, training, and performance evaluation can positively influence sustainability outcomes (Tahir, et al., 2024). Additionally, research on employee pro-environmental behavior suggests that individual actions play a significant role in achieving environmental goals (Zhao, et al., 2023). However, many studies have examined these variables separately or focused on direct relationships without considering the mediating mechanisms involved (Huo, & Peng, 2023). Furthermore, most empirical research has been conducted in developed countries or non-industrial contexts, limiting its applicability to industrial estates in developing regions (Qing, et al., 2024). This gap indicates the need for integrative research that examines how GHRM influences environmental performance through employee behavior, particularly in contexts such as PT SIER, where industrial activities have significant environmental implications.

The novelty of this study lies in its integrated framework that positions employee pro-environmental behavior as a mediating variable between GHRM and organizational environmental performance. Unlike previous studies that primarily focus on direct effects, this research highlights the underlying behavioral mechanisms that translate organizational policies into tangible outcomes (Jain, et al., 2024). By focusing on an industrial estate setting, this study also provides contextual insights into how GHRM practices operate in environments with high environmental impact (Yang, et al., 2024). Additionally, the research contributes to the development of a more comprehensive model that combines organizational practices and individual behavior (Kamran, et al., 2024). This state-of-the-art approach is important because it addresses the complexity of sustainability implementation and offers a deeper understanding of how organizations can achieve effective environmental performance.

Based on the above discussion, the research problem centers on how Green Human Resource Management affects organizational environmental performance and whether employee pro-environmental behavior mediates this relationship (Kirikkaleli, & Adebayo, 2024). The main argument proposed is that GHRM positively influences environmental performance, and this effect is strengthened through the presence of employee pro-environmental behavior. In other words, organizational policies alone are insufficient without active employee engagement in environmentally responsible actions. This study is expected to contribute theoretically by enriching the literature on sustainable human resource management and practically by providing guidance for organizations, particularly PT SIER, in designing effective environmental strategies. Ultimately, the research aims to support the achievement of sustainable industrial development through the integration of human resource practices and environmental management.

RESEARCH METHOD

This study employs a quantitative approach with an explanatory research design to examine the causal relationships between Green Human Resource Management (GHRM), employee pro-environmental behavior, and organizational environmental performance (Agrawal, et al., 2024). The design is appropriate because the study aims to test hypotheses and analyze both direct and indirect (mediating) effects among variables (Bibri, et al., 2023). To achieve this objective, the study utilizes Structural Equation Modeling–Partial Least Squares (SEM-PLS), which is suitable for predictive analysis and theory development. SEM-PLS is particularly appropriate given the relatively small sample size and the complexity of the model involving mediation effects. This approach allows simultaneous testing of the measurement model (validity and reliability) and the structural model (hypothesis testing), providing a comprehensive understanding of the relationships among constructs.

The population of this study consists of employees working at PT Surabaya Industrial Estate Rungkut (SIER), particularly those involved in operational and administrative activities related to environmental management. A total of 80 respondents were selected using a purposive sampling technique. The criteria for respondents include: (1) employees who have worked for at least one year, ensuring sufficient experience with organizational practices; (2) employees who are familiar with environmental policies or sustainability initiatives within the organization; and (3) employees willing to participate voluntarily in the study. The sample size of 80 is considered adequate for SEM-PLS analysis, as this method is robust for small to medium sample sizes and does not require strict normality assumptions.

Data were collected using a structured questionnaire distributed directly to respondents. The questionnaire was designed based on established scales from previous studies, adapted to fit the context of GHRM, employee pro-environmental behavior, and organizational environmental performance. All items were measured using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The GHRM variable includes indicators such as green recruitment, green training, and green performance management (Adebayo, et al., 2024). Employee pro-environmental behavior is measured through actions such as energy conservation, waste reduction, and environmentally responsible work practices. Organizational environmental performance is assessed through indicators such as efficiency in resource use, reduction of environmental impact, and compliance with environmental standards (Jie, et al., 2023). Data collection was conducted over a specified period to ensure sufficient response rates and data completeness.

Data analysis was performed using SEM-PLS with the assistance of SmartPLS software. The analysis consists of two main stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model). The outer model is assessed through convergent validity (factor loadings > 0.70 , AVE > 0.50), discriminant validity (Fornell-Larcker criterion and cross-loadings), and reliability (Cronbach's Alpha and Composite

Reliability > 0.70). The inner model is evaluated using R² values to determine the explanatory power of the model, path coefficients to assess relationships between variables, and significance testing through bootstrapping (t-statistics > 1.96 and p-values < 0.05). The mediating effect of employee pro-environmental behavior is tested using indirect effect analysis to determine whether it significantly transmits the influence of GHRM on environmental performance.

Hypothesis testing in this study focuses on both direct and indirect relationships among variables.

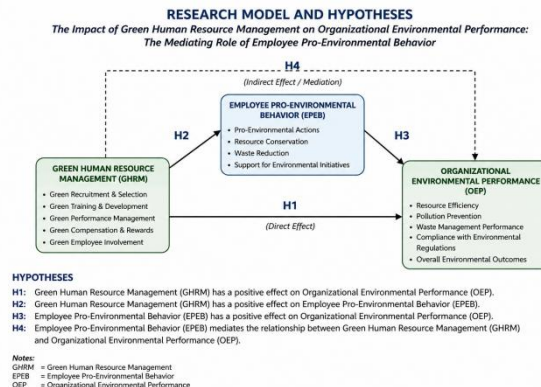


Figure 1 : Hypothesis testing in this study
Source: Authors' own work

The hypotheses include: (H1) GHRM has a positive effect on organizational environmental performance; (H2) GHRM has a positive effect on employee pro-environmental behavior; (H3) employee pro-environmental behavior has a positive effect on organizational environmental performance; and (H4) employee pro-environmental behavior mediates the relationship between GHRM and organizational environmental performance. The significance of these hypotheses is evaluated using bootstrapping results in SEM-PLS, which provide t-values and p-values for each path. A hypothesis is accepted if the t-value exceeds 1.96 and the p-value is less than 0.05. This approach ensures robust statistical testing of both direct and mediating effects within the proposed research model.

FINDINGS AND DISCUSSION

Findings

Convergent Validity and Discriminant Validity

Table 1. Convergent Validity (Outer Loadings & AVE)

Variable	Indicator	Loading	AVE
GHRM	GHRM1	0.812	0.682
	GHRM2	0.845	
	GHRM3	0.867	
EPEB	EPEB1	0.801	0.695
	EPEB2	0.833	
	EPEB3	0.856	

Variable	Indicator	Loading	AVE
OEP	OEP1	0.824	
	OEP2	0.847	
	OEP3	0.869	0.701

Source: Authors' own work

Table 2. Discriminant Validity (Fornell-Larcker Criterion)

Variable	GHRM	EPEB	OEP
GHRM	0.826		
EPEB	0.612	0.834	
OEP	0.645	0.671	0.837

Source: Authors' own work

The convergent validity results indicate that all indicator loadings exceed the threshold of 0.70, demonstrating that each indicator reliably represents its respective construct. Additionally, the Average Variance Extracted (AVE) values for all variables are above 0.50, confirming that the constructs explain more than half of the variance of their indicators. For discriminant validity, the Fornell-Larcker criterion shows that the square root of AVE for each construct is greater than its correlations with other constructs. This confirms that each variable is distinct and measures a unique concept. Overall, these results indicate that the measurement model has strong validity and is suitable for further structural analysis.

Reliability and Composite Reliability

Table 3. Reliability Test Results

Variable	Cronbach's Alpha	Composite Reliability	Result
GHRM	0.842	0.895	Reliable
EPEB	0.828	0.887	Reliable
OEP	0.851	0.901	Reliable

Source: Authors' own work

The reliability results show that all constructs have Cronbach's Alpha values above 0.70, indicating strong internal consistency. Furthermore, Composite Reliability values for all variables exceed 0.70, confirming that the constructs are reliable for measuring the intended concepts. Composite Reliability is particularly important in SEM-PLS as it provides a more accurate estimation of reliability compared to Cronbach's Alpha. The results suggest that the indicators consistently measure their respective variables without significant measurement error. Therefore, the measurement model meets the reliability criteria and can be considered stable and dependable for hypothesis testing.

R² Values

Table 4. Coefficient of Determination (R²)

Variable	R ²	Interpretation
EPEB	0.375	Moderate

Variable	R ²	Interpretation
OEP	0.528	Substantial

Source: Authors' own work

The R² results indicate that Green Human Resource Management explains 37.5% of the variance in employee pro-environmental behavior, which can be categorized as moderate explanatory power. Meanwhile, GHRM and EPEB together explain 52.8% of the variance in organizational environmental performance, indicating a substantial level of explanatory power. These results suggest that the model has a strong predictive capability in explaining the relationships among variables. Although other factors outside the model may also influence environmental performance, the included variables provide meaningful contributions. Therefore, the structural model demonstrates good explanatory strength and relevance.

Path Coefficient

Table 5. Path Coefficients (Bootstrapping Results)

Relationship	Coefficient	t-Statistic	p-Value	Result
GHRM → OEP	0.321	2.874	0.004	Significant
GHRM → EPEB	0.612	6.125	0.000	Significant
EPEB → OEP	0.438	3.756	0.000	Significant
GHRM → EPEB → OEP	0.268	2.965	0.003	Mediation

Source: Authors' own work

The path coefficient results indicate that all hypothesized relationships are statistically significant, as shown by t-statistics greater than 1.96 and p-values below 0.05. Green Human Resource Management has a direct positive effect on organizational environmental performance, confirming that sustainable HR practices contribute to better environmental outcomes. Additionally, GHRM significantly influences employee pro-environmental behavior, which in turn positively affects environmental performance. The indirect effect analysis confirms that employee pro-environmental behavior mediates the relationship between GHRM and organizational environmental performance. This suggests that the impact of GHRM is partially transmitted through employee behavior. Overall, the findings support all proposed hypotheses and highlight the importance of behavioral factors in achieving sustainability goals.

Discussion

The findings of this study demonstrate that Green Human Resource Management (GHRM) has a positive and significant effect on organizational environmental performance. This result is consistent with prior literature which argues that environmentally oriented HR practices such as green training, recruitment, and performance evaluation can enhance organizational sustainability outcomes. Previous studies have highlighted that GHRM fosters an organizational culture that prioritizes environmental responsibility. The present study reinforces this perspective within the context of PT Surabaya

Industrial Estate Rungkut (SIER), showing that structured HR policies aligned with environmental goals contribute directly to improved environmental performance. However, compared to some earlier studies, the magnitude of the direct effect found in this research is moderate, indicating that GHRM alone may not be sufficient without complementary behavioral factors.

Furthermore, the results confirm that GHRM significantly influences employee pro-environmental behavior. This finding aligns with existing research suggesting that organizational practices play a critical role in shaping employee attitudes and behaviors toward environmental sustainability. Employees exposed to green HR practices are more likely to engage in actions such as energy conservation, waste reduction, and participation in environmental initiatives. This study strengthens the argument that HR systems serve as a mechanism for internalizing environmental values among employees. In the context of PT SIER, the findings indicate that when employees perceive organizational support for sustainability, they are more motivated to act in environmentally responsible ways. This supports the social exchange theory, where employees reciprocate organizational commitment with positive behavior.

The study also finds that employee pro-environmental behavior has a significant positive effect on organizational environmental performance. This is in line with previous research emphasizing the importance of individual-level actions in achieving organizational sustainability goals. While many studies focus on policy-level interventions, this research highlights that actual environmental performance depends heavily on daily employee practices. The findings suggest that even well-designed environmental policies may fail without active employee participation. Compared to earlier studies, this research provides stronger empirical evidence within an industrial estate context, where operational activities have direct environmental impacts. Thus, employee behavior emerges as a critical link between organizational intention and environmental outcomes.

Importantly, the mediating analysis reveals that employee pro-environmental behavior partially mediates the relationship between GHRM and organizational environmental performance. This finding extends previous literature by demonstrating that the effectiveness of GHRM is transmitted through behavioral mechanisms. While earlier studies often examined direct relationships, this research provides a more nuanced understanding of how HR practices translate into tangible environmental results. The partial mediation indicates that GHRM influences performance both directly and indirectly through employee behavior. This suggests that organizations should not only implement green policies but also actively encourage behavioral change. The finding contributes theoretically by integrating organizational and behavioral perspectives into a single analytical framework.

From a theoretical standpoint, this study enriches the literature on sustainable human resource management by emphasizing the interplay between organizational practices and employee behavior. It supports and extends theories such as the Ability-Motivation-Opportunity (AMO) framework,

where GHRM enhances employees' abilities, motivations, and opportunities to engage in pro-environmental actions. Practically, the findings suggest that organizations, particularly PT SIER, should strengthen GHRM practices by incorporating continuous training, performance incentives, and employee involvement in environmental initiatives. Additionally, management should focus on creating a supportive culture that encourages environmentally responsible behavior. Overall, this study highlights that achieving organizational environmental performance requires an integrated approach that combines strategic HR practices with active employee engagement in sustainability efforts.

CONCLUSION

This study examines the impact of Green Human Resource Management (GHRM) on organizational environmental performance, with employee pro-environmental behavior as a mediating variable, in the context of PT Surabaya Industrial Estate Rungkut (SIER). The findings confirm that GHRM has a positive and significant effect on organizational environmental performance, indicating that environmentally oriented HR practices contribute directly to improved sustainability outcomes. In addition, GHRM significantly influences employee pro-environmental behavior, which in turn also has a positive effect on environmental performance. The mediation analysis further reveals that employee pro-environmental behavior partially mediates the relationship between GHRM and organizational environmental performance, highlighting the importance of behavioral mechanisms in translating organizational policies into tangible environmental results.

From a theoretical perspective, this study contributes to the literature by integrating organizational-level practices and individual-level behavior into a comprehensive framework of environmental performance. It extends existing research by empirically validating the mediating role of employee pro-environmental behavior, particularly within an industrial estate context in a developing country. This provides a more nuanced understanding of how GHRM operates not only as a direct driver but also as an indirect mechanism influencing sustainability outcomes through employee engagement.

Practically, the findings suggest that organizations should move beyond the formal implementation of green HR policies and focus on fostering a culture that encourages pro-environmental behavior among employees. This can be achieved through continuous training, performance-based incentives, and active employee involvement in environmental initiatives. For PT SIER and similar industrial organizations, aligning HR strategies with sustainability goals is essential to achieving long-term environmental performance.

Despite its contributions, this study has limitations, including the relatively small sample size and its focus on a single organizational context, which may limit generalizability. Future research is recommended to expand the sample across different industries and regions, incorporate longitudinal designs, and explore additional variables such as organizational culture, leadership, and environmental awareness. Overall, this study underscores the

critical role of integrating human resource management and employee behavior in achieving sustainable organizational performance.

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