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## **Sustainable Corporate Strategies: The Influence of Green Human Resource Management (GHRM) on Environmental Performance (EP) with OCBE as a Mediator in the Manufacturing Industry**

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### ***Abstract:***

*This study aims to analyze the effect of Green Human Resource Management (GHRM) on Environmental Performance (EP) with the mediation role of Organizational Citizenship Behavior for the Environment (OCBE). The study was conducted at PT. Merah Putih, a manufacturing company in Indonesia, involving 241 respondents. The results showed that GHRM had a significant effect on EP, both directly and through increasing OCBE as a partial mediator. OCBE contributed to strengthening the impact of GHRM policies on EP, where employee pro-environmental behavior, such as energy saving and waste management, supported the company's operational efficiency. These findings emphasize the importance of a holistic approach in implementing GHRM to encourage employee pro-environmental behavior and improve the company's environmental performance. The study provides recommendations for companies to strengthen environmental training programs, increase employee involvement in sustainability initiatives, and evaluate the effectiveness of GHRM policies periodically.*

**Keywords:** *Green Human Resource Management, Organizational Citizenship Behavior for Environment, Environmental Performance.*

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## **1. Introduction**

Globally, human activities continue to contribute to rising greenhouse gas (GHG) emissions, primarily carbon dioxide and methane. The burning of fossil fuels for energy and transportation remains the primary driver, with carbon dioxide emissions surging from 5 billion metric tons in 1950 to 35 billion metric tons in 2020. As a result, the Earth's average temperature has risen by approximately 1.1°C since the pre-industrial era. Despite international climate agreements, GHG emissions continue to rise and are projected to reach 70 Gt CO<sub>2</sub>eq by 2050 if no substantial mitigation efforts are undertaken. Indonesia, like many other nations, faces severe consequences from climate change, including rising sea levels, droughts, floods, and other environmental disasters, which threaten economic stability, infrastructure, and food security (Saeed et al., 2022; Zhao et al., 2021).

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In response, the Indonesian government has ratified the Paris Agreement through Law Number 16 of 2016 and committed to achieving Net Zero Emissions (NZE) by 2060. As part of this initiative, state-owned enterprises (SOEs) have been directed to implement decarbonization strategies, including carbon economic valuation and voluntary carbon trading mechanisms (VCM). PT. Merah Putih, an SOE in the manufacturing sector, has set incremental targets for reducing GHG emissions until 2030. However, as of 2023, the company has only achieved a 10% reduction, falling short of its 13% target. This shortfall indicates a gap between sustainability commitments and actual implementation (Shah et al., 2024; Roscoe et al., 2019).

To enhance corporate sustainability, PT. Merah Putih introduced a "green company" program incorporating tree planting, waste management, and green technology adoption. However, the company's inability to meet its emission targets suggests that these initiatives require a more structured approach. One such approach is Green Human Resource Management (GHRM), which fosters employee awareness and engagement in environmental practices by integrating sustainability into HR policies, recruitment, training, and performance management (Freire & Pieta, 2022; Yong et al., 2020). Research has shown that GHRM can enhance corporate environmental performance (EP) by embedding pro-environmental behavior within organizational culture (Singh et al., 2020; Zaid et al., 2018).

In addition to GHRM, the success of environmental sustainability initiatives depends on employees' voluntary participation, known as Organizational Citizenship Behavior for Environment (OCBE). Employees who exhibit OCBE engage in discretionary environmental actions beyond their formal job responsibilities, such as reducing energy consumption and promoting sustainable workplace practices (Yong et al., 2019; Yusliza et al., 2019). Studies suggest that OCBE mediates the relationship between GHRM and EP, reinforcing the role of employee-driven sustainability initiatives (Malik & Mughal, 2019; Zhou et al., 2023). However, limited implementation of GHRM at PT. Merah Putih could negatively impact OCBE levels, thereby hindering the company's ability to optimize its environmental performance (Yusliza et al., 2017).

Although extensive research has examined the relationship between GHRM and EP, findings remain inconclusive. Some studies assert that GHRM directly improves EP, while others argue that its impact is contingent upon mediating variables, such as employee attitudes and behaviors (Roscoe et al., 2019; Yong et al., 2020). This inconsistency highlights a theoretical gap in understanding the mechanisms through which GHRM influences EP (Shah et al., 2024). Moreover, prior studies have largely focused on developed economies, with limited empirical evidence from emerging markets like Indonesia, particularly within the manufacturing sector (Saeed et al., 2022; Zhao et al., 2021). This research aims to address these gaps by investigating the role of OCBE as a mediator in the GHRM-EP relationship in an Indonesian SOE.

This study aims to:

1. Examine the direct impact of GHRM on EP in the manufacturing industry.
2. Assess the mediating role of OCBE in the relationship between GHRM and EP.

3. Provide strategic recommendations for enhancing corporate sustainability programs through effective HRM practices.

By bridging the research gap, this study contributes to both theoretical and practical knowledge on sustainable corporate strategies, supporting Indonesia's decarbonization targets and corporate environmental sustainability efforts.

## **2. Theoretical Background**

### **Green Human Resource Management (GHRM)**

Green Human Resource Management (GHRM) is an HR management approach that integrates environmentally friendly practices into all HR functions to enhance an organization's environmental performance. GHRM includes policies and systems that promote sustainable employee behavior, such as green recruitment, green training, green performance management, green compensation, and green involvement (Anwar, 2019; Malik & Mughal, 2019). The primary objectives of GHRM are personal, functional, organizational, and social, aiming to protect human resources, integrate green initiatives into HR, build environmentally conscious teams, and raise social awareness regarding sustainability (Freire & Pieta, 2022; Roscoe et al., 2019). Implementing GHRM brings several benefits, including increased employee motivation, reduced operational costs, enhanced corporate image, and contributions to sustainable development (Saeed et al., 2022; Shah et al., 2024).

### **Dimensions of Green Human Resource Management (GHRM)**

GHRM consists of several key dimensions, including green recruitment and selection, green training and development, green performance management, and green rewards and compensation (Yong et al., 2019; Yusliza et al., 2019). Green recruitment ensures that prospective employees have environmental awareness and understand the organization's green values (Zaid et al., 2018). Green training enhances employees' skills and knowledge related to environmentally friendly practices (Zhao et al., 2021). Green performance management functions to measure and improve employee contributions to the company's environmental performance, including providing feedback on achieving sustainability goals (Roscoe et al., 2019). Green rewards and compensation offer incentives to employees who actively contribute to environmental sustainability (Saeed et al., 2022). In this study, three dimensions—green employee involvement, green performance management, and green training and development—were selected due to their practical relevance, association with other variables, and research efficiency (Freire & Pieta, 2022).

### **Environmental Performance (EP)**

Environmental performance (EP) assesses how an organization manages its environmental impact and contributes to sustainable development (Shah et al., 2024; Zhou et al., 2023). EP consists of two main aspects: the environmental management process and the actual outcomes of environmental initiatives. Evaluating EP involves measuring target achievement, competitive advantage, staff training, and regulatory compliance (Saeed et al., 2022). The primary objective of EP is to ensure that

companies meet their environmental reporting obligations to stakeholders and effectively manage their operational impact on the environment (Singh et al., 2020). EP measurement includes objective indicators such as pollution reduction, as well as non-objective indicators like environmental awareness in corporate decision-making (Yusliza et al., 2017; Yong et al., 2019).

### **Organizational Citizenship Behavior for Environment (OCBE)**

Organizational Citizenship Behavior for Environment (OCBE) refers to voluntary employee behaviors that support environmental sustainability without explicit obligations from the organization (Freire & Pieta, 2022; Malik & Mughal, 2019). OCBE enhances the effectiveness of corporate green strategies by fostering an environmentally friendly workplace culture. It comprises three main dimensions: eco-initiatives, eco-civic engagement, and eco-helping. Eco-initiatives involve individual actions to reduce environmental impact (Zhao et al., 2021). Eco-civic engagement reflects employees' participation in the organization's environmental programs (Zaid et al., 2018). Eco-helping represents mutual support among employees in implementing environmental practices in the workplace (Roscoe et al., 2019). HRM practitioners face challenges in building and maintaining a workforce with high environmental awareness to support organizational sustainability (Yong et al., 2020; Zhou et al., 2023).

## **3. Methodology**

This research was conducted at PT. Merah Putih (Jakarta and Karawang) for two months in October 2024, with a quantitative approach using a survey method and a 5-point Likert scale questionnaire. The variables studied include Green Human Resource Management (GHRM) as an independent variable, Environmental Performance (EP) as a dependent variable, and Organizational Citizenship Behavior for Environment (OCBE) as a mediating variable. The research sample was determined using a simple random sampling technique with the Slovin formula, resulting in a minimum of 241 respondents from a total population of 607 employees. The data were analyzed through validity and reliability tests using SPSS, mean score analysis, and hypothesis testing with Process Macro Hayes (Model 4) to test the mediating effect of OCBE on the relationship between GHRM and EP. A pretest was conducted on 30 respondents to ensure the validity and reliability of the questionnaire before being widely applied.

## **4. Empirical Findings/Result**

### **Instrument Test**

#### **Validity test**

The validity test in this study used Pearson bivariate coefficient through SPSS with p-value <0.05 as a reference. The results of the validity test showed that all items in the Green Human Resource Management (GHRM), Environmental Performance (EP), and Organizational Citizenship Behavioral for Environment (OCBE) variables had a significant correlation with the total score of each variable, with Pearson Correlation

values ranging from 0.525 to 0.904. The GHRM dimension has a strong correlation with the total score, especially G4 (0.866), which shows the greatest contribution in measuring GHRM. In the Environmental Performance variable, items E5 (0.900) and E3 (0.763) have the most significant contribution, while in OCBE, item O3 (0.904) shows the highest correlation. Overall, these results indicate that the instrument used has good validity in measuring each construct.

### Reliability Test

The reliability test on 30 samples showed that all variables had a Cronbach's Alpha value above 0.07, which means that this research instrument is reliable. Green Human Resource Management (GHRM) has a value of 0.908, indicating high consistency in measuring the GHRM concept. Environmental Performance (EP) obtained a value of 0.826, indicating good reliability in measuring environmental performance. Organizational Citizenship Behavior for Environment (OCBE) recorded the highest value, namely 0.919, indicating a great level of reliability in measuring environmentally oriented organizational citizenship behavior. Overall, these results indicate that the instruments used in the study have a great level of consistency and reliability.

**Table 1. Reliability Test Results**

<b>Variable</b>	<b>Cronbach's Alpha</b>	<b>Information</b>
<i>Green Human Resource Management (GHRM)</i>	0,908	<i>Reliable</i>
<i>Environmental Performance (EP)</i>	0,826	<i>Reliable</i>
<i>Organizational Citizenship Behavioral for Environment (OCBE)</i>	0,919	<i>Reliable</i>

Source: 2024 processed original data

### Mean Score and Overall Mean Score Analysis

The results of the mean score and overall mean score analysis show that the company has achieved a fairly high level of commitment to implementing Green Human Resource Management (GHRM), with an overall mean score of 4.00. The implementation of the waste labeling and sorting system (G3) and the clarity of the company's vision/mission related to the environment (G1) have the highest mean scores, 4.28 and 4.21 respectively, indicating the effectiveness of the company's policies in environmental management. However, the environmental training aspect (G6) obtained the lowest mean score of 3.56, indicating the need for improvement in the development of employee skills and awareness related to environmentally friendly practices.

In the Environmental Performance (EP) aspect, the company showed a great commitment with an overall mean score of 4.16. The greening and biodiversity protection program (E4) and the implementation of the environmental management system (E1) had the highest mean scores, 4.46 and 4.42 respectively, reflecting the effectiveness of the sustainability efforts that have been implemented. However, the use of renewable energy (E2) has the lowest mean score of 3.90, indicating that the

company still has room to increase the adoption of more environmentally friendly energy sources to strengthen the positive impact on the environment.

In the Organizational Citizenship Behavioral for Environment (OCBE) aspect, respondents showed high awareness and participation in pro-environmental activities with an overall mean score of 4.09. The item with the highest mean score is ensuring that electrical equipment is turned off and disposing of waste in its place (O1) with a score of 4.47, reflecting individual discipline in energy efficiency and waste management. However, voluntary participation in environmental projects (O5) has the lowest mean score of 3.65, indicating that involvement in formal environmental activities can still be improved. Overall, employees show high concern for the environment, which supports the success of the company's sustainability program.

### **Hypothesis Testing Analysis with Macro Hayes**

Hypothesis testing analysis with Macro Process Hayes Model 4 shows that Green Human Resource Management (GHRM) has a positive influence on Organizational Citizenship Behavior for Environment (OCBE) with a coefficient of 0.6377. OCBE also has a positive effect on Environmental Performance (EP) with a coefficient of 0.3260, while GHRM directly increases EP with a coefficient of 0.3422. The regression equation obtained shows that increasing GHRM and OCBE will have a positive impact on EP. All coefficients produced are significant with a p-value <0.05, so hypotheses H1, H2, and H3 are accepted, which confirms that GHRM and OCBE have a significant contribution to EP. The analysis result shows that the indirect effect of GHRM on EP through OCBE is 0.2079, with a 95% bootstrap confidence interval that does not include zero, so this mediation effect is significant. Because the direct effect of GHRM on EP is also significant, OCBE acts as a partial mediator in this relationship, which supports hypothesis H4. Thus, it can be concluded that GHRM not only directly increases EP, but also provides additional impacts through increasing employee pro-environmental behavior (OCBE).

## **5. Discussion**

The results of the hypothesis test confirm that Green Human Resource Management (GHRM) has a significant effect on Environmental Performance (EP), supporting the proposed hypothesis. The implementation of GHRM at PT. Merah Putih has led to improvements in environmental performance, particularly through the greening program, which received the highest recognition. However, areas such as energy efficiency require further enhancement. These findings align with previous research that highlights how GHRM practices, such as green training and waste management, can positively impact an organization's environmental performance (Roscoe et al., 2019; Yong et al., 2019). Employee participation in environmental programs is a key factor in the success of GHRM, as evidenced by the effectiveness of the greening initiative compared to energy efficiency efforts (Saeed et al., 2022).

This study supports earlier research demonstrating the positive relationship between GHRM and EP (Freire & Pieta, 2022; Singh et al., 2020). However, it contrasts with

studies suggesting that GHRM alone is insufficient to enhance EP without additional moderating factors, such as green transformational leadership and corporate social responsibility (CSR) (Zhao et al., 2021; Zhou et al., 2023). These differences may arise from variations in organizational context and the specific variables examined. The majority of respondents in this study belonged to the 25–40 age group and held executive to supervisory positions, suggesting that GHRM implementation is well received at all organizational levels. This study further reinforces that while GHRM can improve EP, its effectiveness is influenced by external factors, including leadership and corporate culture (Shah et al., 2024; Malik & Mughal, 2019).

Additionally, the results indicate that GHRM significantly affects Organizational Citizenship Behavior for Environment (OCBE), highlighting the role of green policies, continuous training, and incentives in fostering employees' pro-environmental behaviors. Employees with extensive work experience demonstrated a strong understanding of organizational policies and actively participated in environmental initiatives. These findings align with previous studies demonstrating that GHRM enhances OCBE through the development of green organizational identity and environmental values (Freire & Pieta, 2022; Yong et al., 2020).

The findings also suggest that the success of GHRM in promoting OCBE depends on clear policies and organizational support. The high OCBE scores in this study indicate that employees are committed to sustainability, which contributes positively to EP. While previous studies have emphasized the moderating role of green organizational identity and environmental values (Yong et al., 2019; Zaid et al., 2018), this study highlights the direct effect of GHRM on OCBE, further strengthening the understanding that GHRM is a key driver of environmentally responsible behavior in the workplace. Consequently, fostering OCBE through GHRM practices can enhance an organization's overall environmental performance (Yusliza et al., 2019).

Moreover, the study finds that OCBE significantly influences EP, reinforcing the idea that voluntary employee behaviors, such as energy conservation and participation in environmental programs, contribute to sustainability. These results are consistent with previous findings that highlight the role of pro-environmental behaviors in improving operational efficiency and environmental sustainability (Anwar, 2019; Zhao et al., 2021). At PT. Merah Putih, the high OCBE scores reflect employees' strong environmental awareness, particularly in practical actions such as turning off unused electrical equipment and engaging in voluntary environmental initiatives. However, lower participation rates in formal environmental projects indicate the need for improved collective engagement (Roscoe et al., 2019; Zhou et al., 2023). Strengthening GHRM-based policies could further enhance employee involvement in sustainability initiatives (Singh et al., 2020).

The study further reveals that OCBE acts as a partial mediator in the relationship between GHRM and EP. While GHRM directly enhances EP, it also contributes indirectly by fostering OCBE. These findings align with research emphasizing that GHRM practices—such as environmental awareness training and employee

involvement in green policies—can cultivate OCBE, which in turn strengthens EP (Yusliza et al., 2017; Yong et al., 2020). At PT. Merah Putih, the effective implementation of GHRM has encouraged pro-environmental behavior, reflected in high OCBE scores. However, there remains an opportunity to improve engagement in collective environmental projects, which could further optimize EP outcomes (Zaid et al., 2018).

Overall, this study confirms that a comprehensive GHRM strategy, which goes beyond formal policies to actively foster OCBE, can maximize environmental performance. By demonstrating that the mediating role of OCBE applies across different organizational contexts, this study extends the validity of previous theories while providing practical insights for PT. Merah Putih in achieving its sustainability goals (Freire & Pieta, 2022; Shah et al., 2024).

## 6. Conclusions

This study concludes that Green Human Resource Management (GHRM) has a significant effect on Environmental Performance (EP), both directly and through the mediation of Organizational Citizenship Behavior for Environment (OCBE). Effective implementation of GHRM, such as environmental training and resource efficiency policies, not only improves the company's environmental performance and encourages employee voluntary behavior in maintaining environmental sustainability. OCBE has been shown to have a critical function in enhancing EP, where employee pro-environmental behavior, such as energy saving and waste management, has a positive impact on company operations. Thus, a holistic approach that integrates GHRM and OCBE is an effective strategy to optimize the company's environmental performance.

As a follow-up, companies are advised to strengthen environmental training programs, increase employee involvement in pro-environmental projects, and periodically evaluate the effectiveness of GHRM policies in improving EP. In addition, future research can use qualitative or mixed methods to dig deeper into employee experiences in implementing OCBE and expand the scope of the study to other industries to test the generalizability of the findings. Further research could explore other aspects of GHRM, such as green recruitment and green compensation, to further understand how human resource strategies can support environmental sustainability.

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