ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

# The Effect of Green Human Resource Management and Green Innovation on Environmental Performance with Employee Green Behavior as a Mediating Variable: A Case Study of PT. PLN (Persero) Distribution Jakarta Raya

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**Abstract:- Global warming and other environmental issues have become a major focus on the global agenda. Indonesia, as a developing country with a significant industrial sector including the electricity industry, faces significant challenges related to carbon emissions and environmental impacts. This study aims to investigate the influence of Green Human Resource Management (Green HRM) and Green Innovation on company Environmental Performance, considering the role of Employee Green Behavior as a mediator at PT. PLN Distribution Jakarta Raya. The research adopts a quantitative descriptive approach with a cross-sectional design. The research sample consists of employees from PT. PLN Distribution Jakarta Raya selected through purposive sampling. Data were collected via questionnaires and analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS).**

**The analysis results indicate that Green Human Resource Management (H1) significantly and positively influences Employee Green Behavior and Environmental Performance at PT. PLN Distribution Jakarta Raya. Furthermore, Green Innovation also has a significant positive effect on employees' green behavior and Environmental Performance in the company. Employee Green Behavior has been shown to contribute significantly to Environmental Performance. However, the influence of Green Innovation on Environmental Performance is not significant. Moreover, Employee Green Behavior can act as a mediator linking the influence of Green Human Resource Management on Environmental Performance, but not in the case of Green Innovation.**

**This study contributes to the fields of environmental management and human resources by highlighting the importance of integrative strategies to achieve better Environmental Performance in companies. The next step involves implementing these practices on a broader scale to support environmental sustainability in the future.**

***Keywords:-*** *Green HRM, Green Innovation, Employee Green Behavior, Environmental Performance.*

## I. INTRODUCTION

Environmental degradation, particularly global warming, has become a central focus in international forums. This issue is primarily caused by human activities that disregard their impact on nature, especially in the exploitation of natural resources (Ciptadi et al., 2022). Global warming is driven by the increase in greenhouse gas emissions, particularly carbon dioxide. Over the past six decades, global carbon emissions have continuously risen due to the extensive use of fossil fuels, especially in industries, transportation, and technology. Data from the Global Carbon Project shows a dramatic increase from 15.9 GtCO2 in 1959 to 40.5 GtCO2 in 2022. In the same year, the global energy sector produced 34.37 billion tons of CO2, the highest amount in history, with Indonesia ranking sixth in energy sector emissions, contributing 691.97 million tons of CO2 in 2022 (GCB, 2023; Institute, 2023).

As one of the countries with the highest carbon emissions, Indonesia has a special responsibility to mitigate the impacts of climate change. By ratifying the Paris Agreement through Law No. 16 of 2016, Indonesia has committed to reducing emissions by 31.89% unconditionally and 43.20% conditionally by 2030, with the goal of achieving net zero emissions by 2060 or earlier (Riyadi, 2024). This commitment encourages companies, particularly in the state-owned enterprise (BUMN) sector, to implement sustainable economic practices.

The electricity sector, often associated with the State Electricity Company (PLN), is a major contributor to national carbon emissions. Although PLN has implemented various changes and improved its environmental performance, earning several awards, there are still aspects of environmental performance that require further attention. Current evaluations tend to focus on key performance indicators and annual targets, primarily based on past achievements. Additionally, some indicators, such as the use of non-renewable energy, coal, oil, natural gas, and the volume of hazardous waste (B3), still exhibit variability.

In its efforts to achieve the Net Zero Emission target, PT. PLN is committed to enhancing its internal capacity through various strategic programs. These programs include reducing

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

coal usage, accelerating the development of new and renewable energy, implementing biomass co-firing technology, and increasing clean power generation. Furthermore, PLN is also focusing on REC services, supporting electric vehicle ecosystems, developing CCS technology, innovating hydrogen in co-firing, and developing Smart Grid and Control technologies. All these efforts aim to improve the company's environmental performance by reducing carbon emissions and increasing the use of green technologies.

The company's environmental performance, which encompasses actions and activities that protect the environment, is influenced by several factors, including Green Human Resources Management (GHRM), Green Innovation, and Employee Green Behavior. GHRM refers to policies and practices that promote environmentally friendly behavior among employees, while Green Innovation involves approaches to reduce the use of natural resources and harmful emissions through product, process, and organizational innovation. Employee Green Behavior, as an essential part of GHRM and Green Innovation practices, includes employee behaviors that contribute to environmental sustainability goals.

PT. PLN has implemented GHRM through various training programs and policies that support environmental sustainability, as well as green innovations such as the development of Green Hydrogen Plants and Smart Grids. Although the direct impact of GHRM on environmental performance is still debated, PLN's efforts are expected to have a positive effect. The integration of GHRM, Green Innovation, and Employee Green Behavior is anticipated to enhance the company's environmental performance and contribute to achieving Net Zero Emission.

Currently, the measurement of environmental performance at PLN is based on key performance indicators (KPIs) such as water consumption, energy usage, and greenhouse gas emission reductions. However, there are some weaknesses in these KPIs that need to be addressed, particularly in considering social and local impacts. This research aims to analyze the influence of GHRM, Green Innovation, and Employee Green Behavior on environmental performance at PT. PLN (Persero) Distribution Jakarta Raya, as well as to examine the mediating role of Employee Green Behavior in these relationships.

## II. LITERATURE REVIEW

➢ *Environmental Performance*

Environmental performance refers to a company's ability to contribute to environmental preservation through all activities and practices that demonstrate the company's commitment to environmental sustainability, exceeding legal obligations (Sukatin et al., 2022; Maesaroh & Etty, 2022). Factors influencing environmental performance include the company, government, society, economy, and technology (Zhang et al., 2023). The dimensions of environmental performance encompass human health, ecosystem vitality, and socioeconomic sustainability (Rosli et al., 2017). Environmental performance can be measured using tools such as the Environmental Performance Index developed by Rosli et al. (2017) and other scales that assess aspects such as legal compliance and environmental impact (Sobaih et al., 2020; Teixeira et al., 2023).

➢ *Green Human Resources Management (GHRM)*

Green Human Resources Management (GHRM) is the integration of human resource management policies and practices aimed at promoting environmentally friendly behavior in the workplace (Valeri & Sousa, 2024; Ramachandran, 2022). The primary goal of GHRM is to implement sustainable practices in the workplace and reduce negative environmental impacts (Sutawidjaya et al., 2023). The dimensions of GHRM include green recruitment and selection, green training, green performance management, green rewards, and green involvement (Saptaria et al., 2022). GHRM can be measured using scales developed by Tang et al. (2018) and Hossain et al. (2022), which cover these various dimensions.

➢ *Green Innovation*

Green innovation refers to the adoption of environmentally friendly technologies, processes, and products, aimed at reducing negative environmental impacts while providing added value to the company (Qiangji, 2023; Lestari, 2019). The main benefits of green innovation include cost reduction, enhanced business reputation, and compliance with environmental regulations (Ardiansyah et al., 2023). The dimensions of green innovation include green product innovation, green process innovation, green management innovation, and green design innovation (Chen et al., 2006; Tseng et al., 2012). Green innovation can be measured using Likert scales developed by Chen et al. (2006) and Li et al. (2022).

➢ *Employee Green Behavior*

Employee green behavior refers to actions deliberately taken to reduce negative environmental impacts in the workplace (Yanti & Nawangsari, 2021; Zacher et al., 2023). Factors influencing employee green behavior include knowledge, attitudes, social norms, and motivation (Weerarathna et al., 2017). The main dimensions of employee green behavior include working sustainably, avoiding environmental harm, influencing others, and taking initiative (McConnaughy, 2014). Employee green behavior can be measured through questionnaires developed by McConnaughy (2014), which include these various dimensions with validated reliability.

➢ *Research Framework and Hipothesis*

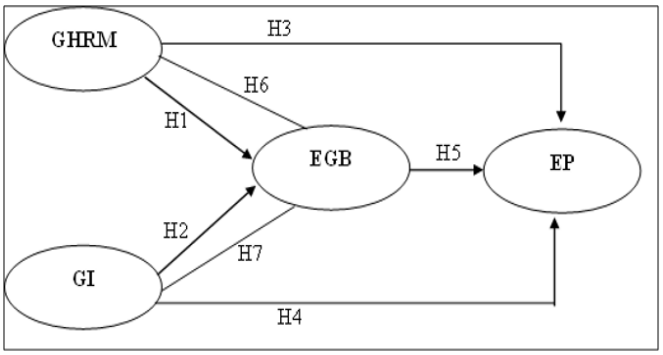


Fig 1 Framework

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

The figure presents a conceptual model illustrating the relationships between several variables, namely Green Human Resource Management (GHRM), Green Innovation (GI), Employee Green Behavior (EGB), and Environmental Performance (EP). In this model, several hypotheses explain the relationships between these variables.

- H1 indicates a positive relationship between GHRM and EGB.
- H2 suggests a positive relationship between GI and EGB.
- H3 illustrates that GHRM has a direct impact on EP.
- H4 shows that GI has a direct influence on EP.
- H5 suggests that EGB has a positive impact on EP.
- H6 and H7 indicate the mediating effects of EGB on the relationships between GHRM and EP, as well as between GI and EP.

This model suggests that environmentally friendly human resource management practices (GHRM) and green innovation (GI) can encourage environmentally friendly behavior among employees (EGB), which, in turn, can enhance the company's environmental performance (EP). Additionally, GHRM and GI may also have direct effects on environmental performance without necessarily being mediated by employee green behavior.

## III. RESEARCH METHODS

In this study, a descriptive quantitative research design with a cross-sectional approach was utilized, where the research was conducted at a single point in time. The research population consisted of employees of PT. PLN (Persero) Distribution Jakarta Raya, with the sample selected using purposive sampling based on specific criteria. The research variables included Green Human Resource Management (GHRM), Green Innovation (GI), Employee Green Behavior (EGB), and Environmental Performance (EP). Data collection was carried out using a questionnaire distributed via Google Forms. The collected data were analyzed using Structural Equation Modeling (SEM) with SmartPLS software version 4.1.0.3. Validity and reliability tests were conducted to ensure construct quality, followed by path analysis to evaluate the relationships between variables. Additionally, hypotheses were tested using t-tests and mediation tests with the Sobel test. The analysis results were presented in the form of path coefficients, R-squared values, and Q-square values to evaluate the proposed model and assess the predictive strength of the model.

## IV. RESULTS AND DISCUSSION

### *A. Descriptive and Cross Tabulation*

Table 1 Descritive Statistic

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| **Gender** | Female | 27 | 12.30% |
| | Male | 193 | 87.70% |
| | **Total** | **220** | **100%** |
| **Age** | 18-30 Years | 64 | 29.10% |
| | 31-45 Years | 101 | 45.90% |
| | > 45 Years | 55 | 25% |
| | **Total** | **220** | **100%** |
| **Education** | High School/Equivalent | 65 | 29.50% |
| | Diploma | 37 | 16.80% |
| | Bachelor | 113 | 51.40% |
| | Postgraduate | 5 | 2.30% |
| | **Total** | **220** | **100%** |
| **Work Unit** | UP2D | 79 | 35.90% |
| | UID | 16 | 7.30% |
| | UP3 | 125 | 56.80% |
| | **Total** | **220** | **100%** |
| **Position** | Functional | 131 | 59.50% |
| | Structural | 89 | 40.50% |
| | **Total** | **220** | **100%** |

Source: Primary Data, Processed (2024)

The table presents the characteristics of the respondents who participated in the study. The **gender** distribution shows that the majority of respondents are male, comprising 87.7% of the total sample, while females account for 12.3%.

Regarding **age**, the largest group of respondents falls within the 31-45 years age range, representing 45.9% of the sample. This is followed by those aged 18-30 years, making up 29.1%, and those over 45 years, accounting for 25%. In terms of education, more than half of the respondents (51.4%) hold a bachelor's degree. High school or equivalent education is the next most common, with 29.5% of respondents. Diploma holders make up 16.8%, and those with postgraduate qualifications represent a small portion of the sample at 2.3%.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

Looking at the work units, the majority of respondents are from UP3, constituting 56.8% of the sample. UP2D follows with 35.9%, while UID has the smallest representation at 7.3%. Finally, in terms of position, a larger proportion of respondents hold functional roles, making up 59.5%, while 40.5% are in structural positions.This distribution of characteristics provides a comprehensive overview of the respondents, highlighting that the sample is predominantly male, middle-aged, and well-educated, with a significant proportion working in functional roles within the UP3 work unit.

The analysis of the respondents' perceptions reveals several key insights regarding environmental efforts, green HR practices, green innovation, and employee green behavior within the company. Overall, employees hold a positive view of the company's environmental performance and green innovation, with high mean scores of 3.95 and 4.01, respectively. This indicates the company's strong commitment to environmental sustainability and the development of green technologies. However, there is room for improvement in integrating green practices into HR management, as indicated by the lower mean score of 3.81 in this area. This suggests that the company needs to strengthen programs related to performance evaluation, recruitment, and green-based incentives.

Employees generally exhibit positive green behaviors, with a mean score of 3.98, reflecting their engagement in energy-saving practices, recycling, and using eco-friendly transportation. To further enhance these behaviors, the company should continue its efforts in integrating green practices within HR and encourage consistent green behavior among employees through educational and training programs, as well as offering more attractive rewards and incentives.

The cross-sectional analysis highlights the dominant trends in positive perceptions of environmental performance, green HR practices, and green innovation across various employee characteristics, including work unit, position, age, gender, education, and tenure. The majority of employees perceive the company's environmental performance, green HR practices, and green innovation efforts as effective, with only minor variations in perceptions. This indicates a strong and consistent positive trend in the company's environmental initiatives, green management practices, and innovation strategies within PT. PLN Distribusi Jakarta Raya.

*B. Outer Model*

➢ *Validity and Reliability*

The results of the validity and reliability tests using SmartPLS indicate that the constructs in this study demonstrate strong convergent and discriminant validity. The outer loading values for all indicators exceed 0.70, confirming robust convergent validity. Additionally, the Average Variance Extracted (AVE) values for all constructs range from 0.580 to 0.779, which are above the acceptable threshold of 0.50, indicating that each construct explains a sufficient amount of variance from its indicators.

For discriminant validity, the cross-loading results show that each indicator loads more strongly on its respective construct than on other constructs, confirming that the indicators are well-suited to their respective constructs. The Fornell-Larcker criterion further supports the discriminant validity, as the square root of the AVE for each construct is greater than the correlations with other constructs, signifying clear distinctions between the constructs.

The reliability analysis reveals high composite reliability (CR) values for all constructs, with CR scores of 0.974 for EGB, 0.957 for EP, 0.973 for GHRM, and 0.984 for GI. These values demonstrate that the measurement instruments used are highly reliable and provide consistent data, underscoring the internal consistency and reliability of the constructs.

Overall, the findings indicate that the measurement model in this study is both valid and reliable, providing a strong foundation for further analysis. The high reliability of the constructs, particularly for Green Innovation (GI), suggests that the instruments used in this study are robust and capable of accurately measuring the variables of interest.

*C. Inner Model*

➢ *Path Coeeficient*

- *Path Analysis of Green Behavior*

Table 2 Path Coeeficient 1

| | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics (\|O/STDEV\|) | P values |
|---|---|---|---|---|---|
| **GHRM -> EGB** | **0.752** | 0.749 | 0.108 | 6.950 | 0.000 |
| **GI -> EGB** | **-0.471** | -0.466 | 0.120 | 3.936 | 0.000 |

Source: Primary Data, Processed (2024)

Based on the data above, the structural equation for Employee Green Behavior (EGB) can be formulated as follows: ή1 = bƐ1 + bƐ2 + eή1 ή1 = 0.752 - 0.471 + eή1

Explanation: ή1 = Structural equation for EGB bƐ1 = Path coefficient for GHRM bƐ2 = Path coefficient for GI eή1 = Error term From the data, it can be interpreted that the path coefficient between Green Human Resource Management (GHRM) and Employee Green Behavior (EGB) is 0.752. This indicates that for every one-unit increase in GHRM, there is a corresponding increase of 0.752 units in EGB, accounting for other variables in the model. Meanwhile, the path coefficient between Green Innovation (GI) and EGB is -0.471. The negative sign indicates a negative relationship between GI and EGB, meaning that a one-unit increase in GI is associated with a 0.471 unit decrease in EGB.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

➢ *Path Analysis of Environmental Performance (EP)*

Table 3 Path Coeeficient 2

| | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics (\|O/STDEV\|) | P values |
|---|---|---|---|---|---|
| **GHRM -> EP** | **0.410** | 0.421 | 0.089 | 4.587 | 0.000 |
| **GI -> EP** | **0.216** | 0.207 | 0.099 | 2.189 | 0.029 |
| **EGB -> EP** | **0.169** | 0.171 | 0.059 | 2.859 | 0.004 |

Source: Primary Data, Processed (2024)

Based on the data above, the structural equation for Environmental Performance (EP) can be formulated as follows: ή2 = bƐ1 + bƐ2 + bƐ3 + eή2 ή2 = 0.410 + 0.216 + 0.169 + eή2. Explanation: ή2 = Structural equation for EP bƐ1 = Path coefficient for GHRM bƐ2 = Path coefficient for GI bƐ3 = Path coefficient for EGB eή2 = Error term

The path coefficient from Green Human Resource Management (GHRM) to Environmental Performance (EP) is 0.410, indicating that the implementation of GHRM has a significant impact on the company's environmental performance. This positive value suggests that the more sustainable human resource management practices are applied, the higher the company's environmental performance will be. Conversely, the path coefficient from Green Innovation (GI) to EP is 0.216, showing that green innovation also contributes positively to the company's environmental performance, though its influence is lower compared to that of GHRM.

Additionally, the path coefficient from Employee Green Behavior (EGB) to EP is 0.169, confirming that employees' green behavior plays an important role in enhancing the company's environmental performance. Overall, these three factors individually contribute positively to EP, with GHRM having a more dominant influence compared to GI and EGB, as reflected in their respective path coefficients.

➢ *Model Feasibility Test*

The study's findings on the determination coefficients (R-Square) indicate the model's ability to explain the variance in dependent latent variables by the independent latent variables. The R-Square value for Employee Green Behavior (EGB) is 0.217, suggesting that 21.7% of the variability in EGB can be explained by the independent variables in the model, indicating a moderate level of influence. For Environmental Performance (EP), the R-Square value is 0.448, meaning that 44.8% of the variability in EP is explained by the independent variables, which indicates a relatively high level of influence.

The Q-Square values for EGB and EP are 0.145 and 0.247, respectively. These positive values suggest that the model has a better predictive ability than a baseline model with no independent variables, with EP showing a stronger predictive capacity. The Goodness of Fit (GoF) Index, calculated as 0.475, indicates a moderate level of model fit with the observed data. Although this value suggests that the model has a reasonable fit, further refinement may be needed to improve the model's alignment with empirical data.

The F-Square analysis reveals the varying degrees of influence that the independent variables have on the dependent variables. GHRM has a moderate impact on EGB, with an F-Square value of 0.254, while the influence of GI on EGB is weak, with an F-Square of 0.099. The impact of EGB on EP is weak (0.041), as is the impact of GHRM (0.086) and GI (0.027) on EP. These findings indicate that while GHRM moderately influences EGB, other relationships in the model exhibit weaker or even negligible effects. In summary, the analysis shows that the model provides a reasonable explanation of the variance in EGB and EP, with moderate predictive power and model fit. However, the relationships between some variables are relatively weak, indicating areas where the model could be strengthened or further refined.

*D. Hypothesis Test*

➢ *Direct Effect*

Table 4 Coeeficients Effects

| | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics (\|O/STDEV\|) | P values |
|---|---|---|---|---|---|
| EGB -> EP | 0.169 | 0.171 | 0.059 | 2.859 | 0.004 |
| GHRM -> EGB | 0.752 | 0.749 | 0.108 | 6.950 | 0.000 |
| GHRM -> EP | 0.538 | 0.549 | 0.080 | 6.691 | 0.000 |
| GI -> EGB | -0.471 | -0.466 | 0.120 | 3.936 | 0.000 |
| GI -> EP | 0.136 | 0.126 | 0.098 | 1.383 | 0.167 |

Source: Primary Data, Processed (2024)

The analysis results indicate that the effects between the variables tested can be categorized based on statistical significance. The effect between EGB and EP is statistically significant, as evidenced by a t-statistic of 2.859 and a p-value of 0.004, indicating that this effect is significant. The effects between GHRM and EGB, as well as GHRM and EP, are also highly significant, with t-statistics of 6.950 and 6.691 respectively, and very small p-values (0.000), confirming the strong significance of these relationships. Similarly, the effect between GI and EGB is strongly significant, with a t-statistic

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

of 3.936 and a p-value of 0.000. In contrast, the effect between GI and EP is not statistically significant, with a t-statistic of 1.383 and a p-value of 0.167, indicating that this effect is not strong enough to be considered statistically significant.

➢ *Indirect Effect*

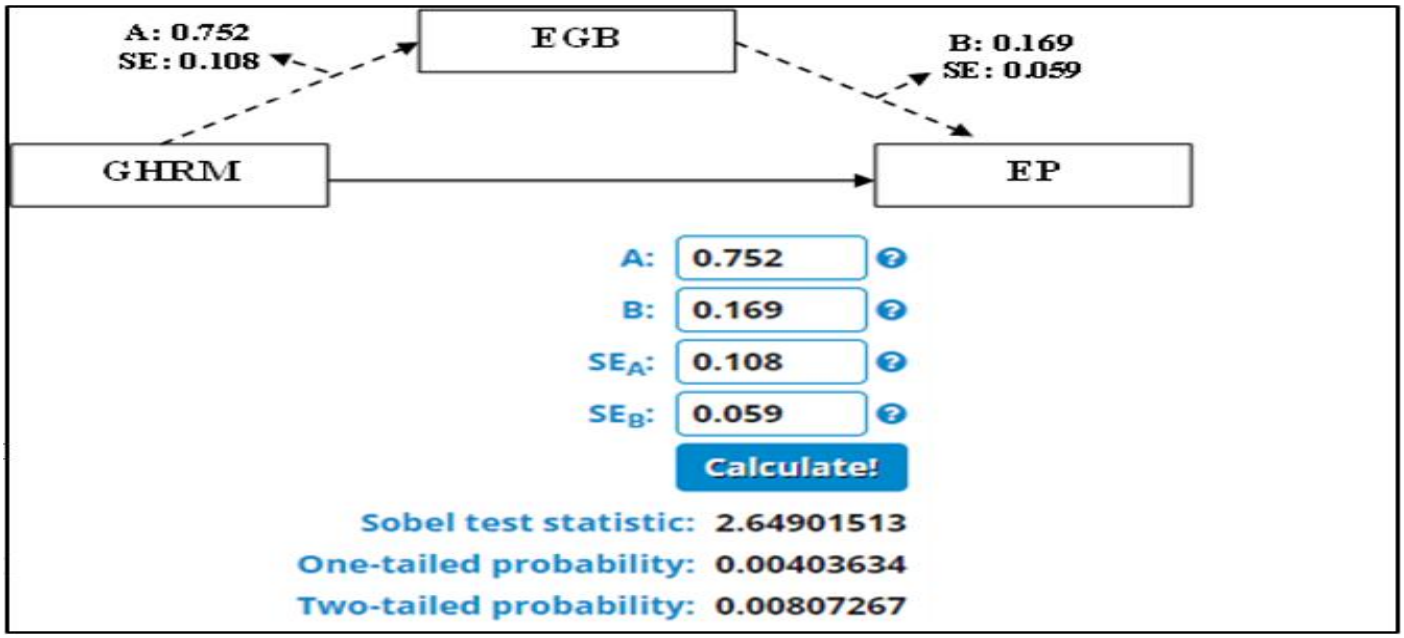


Fig 2 Mediation Test of GHRM on EP through EGB
Source: SmartPLS & Sobel Data Analysis (2024)

Based on the Sobel test analysis, there is statistical evidence of a significant indirect effect of GHRM on EP through the mediator variable EGB. The Sobel test statistic is 2.64, which exceeds the critical threshold of 1.96 commonly used in significance testing (assuming a two-tailed test with alpha = 0.05). This indicates a likely significant indirect effect. Additionally, the two-tailed significance value of 0.008 is less than the common significance level of 0.05, providing sufficient evidence to support the presence of a significant indirect effect.

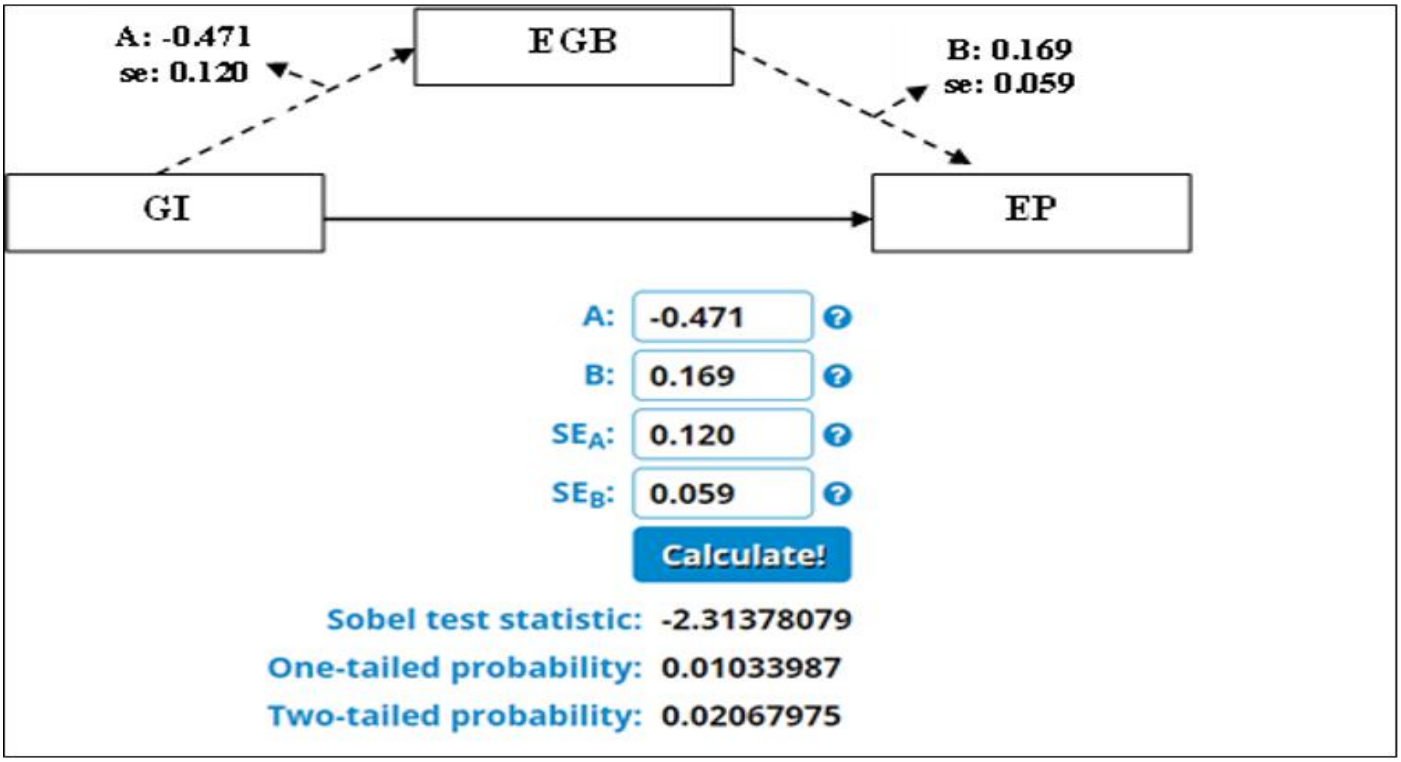


Fig 3 Mediation Test of GI on EP through EGB
Source: SmartPLS & Sobel Data Analysis (2024)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

The Sobel test statistic shows a value of -2.31. This result is well below the commonly used threshold of 1.96, which indicates a potential for a significant indirect effect (assuming a two-tailed test with alpha = 0.05). Therefore, based on this statistic, it is difficult to conclude the existence of a significant indirect effect of GI on EP through the mediator EGB. Although the two-tailed significance value of 0.02 is less than the common significance level of 0.05, this does not support the presence of an indirect effect of GI on EP through EGB, as the Sobel test statistic is negative.

The hypothesis testing results summarized in Table 4.19 reveal several key findings regarding the relationships between the variables studied. Green Human Resource Management (GHRM) and Green Innovation (GI) both have a significant positive impact on Employee Green Behavior (EGB) at PT. PLN (Persero) Distribusi Jakarta Raya, with t-statistics of 6.950 and 3.936, respectively, and p-values of 0.000, leading to the acceptance of these hypotheses (H1 and H2). Additionally, GHRM also positively influences Environmental Performance (EP) with a t-statistic of 6.691 and a p-value of 0.000, confirming this hypothesis (H3). However, the impact of GI on EP was not significant, as indicated by a t-statistic of 1.383 and a p-value of 0.167, resulting in the rejection of this hypothesis (H4). EGB positively influences EP with a t-statistic of 2.859 and a p-value of 0.004, supporting this hypothesis (H5). EGB was found to mediate the relationship between GHRM and EP significantly (H6), with a Sobel test statistic of 2.64 and a p-value of 0.008. However, EGB did not significantly mediate the relationship between GI and EP, as indicated by a negative Sobel test statistic of -2.31, despite a p-value of 0.02, leading to the rejection of this hypothesis (H7).

## V. DISCUSSION

The research presents several critical managerial implications aimed at bolstering the effectiveness of Green Innovation initiatives, fostering stronger employee green behavior, and ultimately enhancing the environmental performance at PT. PLN (Persero) Distribusi Jakarta Raya. To achieve these goals, it is imperative that management ensures the consistent application of Green Innovation strategies across all operational units. This consistency can be facilitated by developing comprehensive, uniform implementation guidelines and instituting a rigorous system of regular monitoring to align practices with company-wide environmental goals.

Moreover, direct involvement of employees in Green Innovation initiatives is crucial. Management should consider forming dedicated green teams within each unit, comprising employees from various levels of the organization, to oversee and actively engage in the implementation of these programs. Such direct involvement is likely to foster a deeper sense of responsibility and a better understanding among employees of the importance of these initiatives, thereby increasing their motivation to adopt and sustain green behaviors.

In addition to fostering direct involvement, it is essential to invest in continuous environmental training and education programs. These programs should be inclusive, encompassing all employees, and designed to not only raise awareness but also to enhance the knowledge and skills necessary for effectively addressing environmental issues within their roles. The aim should be to embed green values into the daily operations and culture of the company, ensuring that employees are well-equipped to implement sustainable practices in their work.

A robust system of rewards and recognition should also be introduced to incentivize and reinforce green behavior among employees. This could include financial incentives, certificates of recognition, or public acknowledgment during company meetings. By formally recognizing and rewarding green behavior, management can further embed a culture of sustainability within the organization, encouraging more employees to participate actively in environmental initiatives.

The commitment of top management to Green Innovation must be visible and unwavering. This involves not only allocating adequate resources—both financial and human—but also providing continuous support and advocacy for green initiatives. Such top-level commitment sends a powerful message across the organization about the importance of sustainability, which can significantly enhance employee buy-in and participation in green programs.

Furthermore, the development of clear and measurable environmental performance indicators is crucial. These indicators should be regularly assessed and reported, with findings transparently communicated to all employees. This transparency fosters a culture of accountability and ensures that employees are aware of the impact their efforts have on the company's environmental goals, which can further motivate them to contribute to these efforts.

Lastly, while many Green Innovation projects might involve external parties, it is essential that knowledge and skills are effectively transferred to internal employees. This ensures that the benefits of these projects are fully realized within the organization and that employees can continue to apply green practices independently, even after the completion of externally managed projects. By equipping internal teams with the necessary expertise, PT. PLN can ensure the sustainability of its green initiatives and reinforce its commitment to long-term environmental stewardship.

In conclusion, by implementing these managerial strategies—consistent application of Green Innovation, direct employee involvement, continuous training, a robust reward system, strong top management commitment, clear performance indicators, and effective knowledge transfer—PT. PLN (Persero) Distribusi Jakarta Raya can significantly enhance its environmental performance. These steps will not only strengthen the company’s green credentials but also foster a more sustainable and environmentally responsible corporate culture.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG951

## VI. CONCLUSSION

The study concludes that Green Human Resource Management (GHRM) positively influences Employee Green Behavior (EGB) at PT. PLN Distribusi Jakarta Raya. Effective implementation of GHRM practices, including environmental awareness in recruitment, training, and the development of an eco-friendly organizational culture, significantly enhances EGB among employees. Similarly, Green Innovation (GI) also positively impacts EGB, encouraging environmentally friendly behaviors through the introduction of green technologies and processes. Moreover, GHRM positively affects Environmental Performance (EP), with effective GHRM practices contributing to improved environmental outcomes, such as reduced emissions, resource efficiency, and compliance with environmental regulations. However, GI does not have a significant impact on EP, potentially due to the relative novelty of the programs. EGB itself positively influences EP, indicating that environmentally conscious employee behaviors significantly contribute to the company's environmental performance. Additionally, EGB mediates the relationship between GHRM and EP, further emphasizing the importance of GHRM in fostering environmentally responsible behaviors that enhance EP. Conversely, EGB does not mediate the relationship between GI and EP, suggesting that while employees engage in green behaviors, these are not yet effectively translating into improved environmental performance due to the current stage of GI implementation.

Based on these conclusions, several recommendations are proposed. For PT. PLN Distribusi Jakarta Raya, it is suggested to strengthen GHRM by emphasizing environmental consciousness in recruitment, training, and employee development. Additionally, increasing investment in GI, such as renewable energy use and green technology adoption, is crucial for enhancing overall environmental performance. Encouraging a sustainability-focused organizational culture and providing incentives for employees actively participating in sustainable environmental practices can further reinforce EGB. Regular monitoring and evaluation of environmental performance are also recommended to ensure that all green practices and innovations are positively impacting the company's EP.

For employees of PT. PLN Distribusi Jakarta Raya, it is recommended that they support the implementation of GHRM and GI practices by adopting eco-friendly behaviors, such as utilizing renewable energy sources and practicing energy efficiency. A heightened awareness of environmental issues and their daily activities' impact can help employees contribute more effectively to improving the company's environmental performance. Actively participating in training programs related to environmental practices and sustainability is also encouraged, as it enhances employees' competencies in these areas. Additionally, employees are urged to use environmentally friendly products, manage waste properly, and reduce resource consumption to contribute significantly to the company's environmental performance.

For future researchers, it is suggested that further studies focus on analyzing the long-term impact of GHRM and GI practices on environmental performance and how these factors can adapt to changes in the energy industry context. Investigating how other sustainability practices can further enhance environmental performance in the energy sector, such as supply chain sustainability or waste management policies, is also recommended. Conducting further case studies across different companies in various industries or making cross-country comparisons could provide additional insights into the factors influencing environmental performance.

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