The Influence of Green Human Resource Management on Employees' Green Behaviour

Elvira Azzahra[*1] , Dina Mellita[2]

[1,2] *Universitas Bina Darma, Palembang, 30264, Indonesia*
[*]Corresponding Author: elviraazzahra99@gmail.com

ABSTRACT

This research aims to determine the effect of environmentally friendly recruitment selection, environmentally friendly training, environmentally friendly performance management, environmentally friendly payments & rewards, and environmentally friendly involvement on employee green behavior. The method used is quantitative, the research object is employees of PT. Bukit Asam Tbk Tanjung Enim City. Respondents in this research were employees of PT. Bukit Asam Tbk Tanjung Enim as many as 95 people collected data using a questionnaire. This research sample was taken using a simple random sampling technique, namely taking samples from the population randomly without distinguishing between education, position or status. The data analysis technique was carried out using SPSS version 29. Based on the results of multiple linear regression analysis research, variables were obtained that influence employee green behavior, namely green training, green pay & rewards and green involvement at PT. Bukit Asam Tbk. Meanwhile, variables that do not influence employee green behavior are environmentally friendly recruitment selection and environmentally friendly performance management at PT. Bukit Asam Tbk.

Keywords: GHRM, Green recruitment selection, Green pay & rewards, Green engagement, Green employee behavior.

1. INTRODUCTION

Currently, the environment is a global concern due to the increasing global greenhouse gas emissions and rising air pollution in major cities[1], [2]. When coal and natural gas are used as fuel, heat is reflected back to the earth instead of escaping into space. Current environmental problems are exacerbated by deforestation, water pollution from industrial waste, poor waste management, and the use of green spaces for housing. Most people view these phenomena as a result of human activities, regardless of whether they are caused by climate change or not. The presence of manufacturing and business activities is undoubtedly one of the explanations, causing harm to the Earth, which can lead to environmental problems due to these environmentally unfriendly human actions[3], [4].

Environmental issues have now become widespread problems. Nowadays, everyone must do their best to protect and preserve nature. Additionally, the mining industry also bears this responsibility. Mining is one of the industries that contribute to air pollution. Employee awareness of environmental protection is crucial.The mining industry in South Sumatra is experiencing changes and growth[5], [6]. Coal production is one of the sectors driving the growth of the mining sector. According to Bisnis.com news agency, based on an interview with the Head of the South Sumatra Energy and Mineral Resources Department (ESDM Sumsel), Hendriansyah, it was concluded: "South Sumatra's coal production in November 2023 was 94 million tons, exceeding the 2022 figure of 90 million tons." The increase in coal production from 2022 to 2023 indicates growth in the mining industry in South Sumatra[7], [8].

This impact can be both positive and negative on various economic, socio-cultural, and environmental aspects [9], [10]. Amid the progress of the mining industry, environmental impacts always remain a primary concern. Waste generated from mining is one of the factors affecting the environment. Mines produce various types of waste such as tailings, waste rock, and mine water. Organizations face environmental issues when they seek to improve company performance[11]. Many companies are adopting green mining practices due to environmental concerns. PT. Bukit Asam Tbk is one of the companies implementing green mining. With the concept of green mining, it can contribute to the government's sustainable development programs and comply with Indonesia's mining code of ethics managed by the Indonesian Mineral Reserves Committee (KCMI). This is a way for the government to thank mining companies KK, PKP2B, and IUP, as well as IUJP mining service companies, that have strived to apply good mining practices. The government also provides positive support through the Good Mining Practices Award[12]. Thus, with the awards organized by the government, it is expected that each mining company can become a sustainable mining industry. Employee Green Behavior (EGB) is essentially useful for society, in practice, it is described as "measurable actions and behaviors carried out by the workforce in relation to environmental sustainability"[13], [14].

The increasing global focus on environmental sustainability, particularly in industries like mining, highlights the need for businesses to adopt eco-friendly practices to mitigate their environmental impact. In this context, Green Human Resource Management (GHRM) plays a crucial role in integrating sustainable principles into organizational operations, influencing employee behavior through practices such as green recruitment, training, performance management, rewards, and involvement. Despite the growing adoption of GHRM, its effectiveness in fostering green behavior among employees, especially in the mining sector, remains underexplored. Many companies struggle with aligning these green initiatives with actual employee behavior, and certain dimensions of GHRM, like green recruitment and performance management, often fall short in driving meaningful change. This research aims to investigate how specific GHRM practices green recruitment selection, green training, green performance management, green pay & rewards, and green involvement—influence employee green behavior at PT. Bukit Asam Tbk. By identifying the most impactful practices, the study seeks to offer actionable insights for improving the implementation of GHRM in the mining industry, ultimately contributing to enhanced environmental performance and sustainability.

Green Human Resource Management (GHRM), also known as "green" HRM, is crucial for successful sustainable business development[15]. Globally pursued for its numerous business benefits, including improved environmental performance[16], [17], GHRM is gaining traction. At PT. Bukit Asam Tbk, GHRM practices aim to reduce the environmental impact of mining activities and promote environmental awareness among employees. This includes programs like purifying mine wastewater, reducing paper and plastic use, establishing eco-friendly regulations, and incorporating technology in operations. However, proper implementation and support through training and evaluation are needed. Additionally, discipline and motivation must be enhanced to boost initiatives[18], [19].GHRM comprises five dimensions: Green Recruitment Selection, Green Training, Green Performance Management, Green Pay & Reward, and Green Involvement [3], [4]. The author aims to explore how these dimensions influence employees' green behavior, leading to the research title: "The Influence of Green Human Resource Management on Employees' Green Behavior at PT. Bukit Asam Tbk".

2. METHODS

The Research Object is PT. Bukit Asam Tbk. is a coal mining company based in Indonesia that has been operating in South Sumatra since its establishment in 1981. PT. Bukit Asam Tbk aims to lay a solid foundation to achieve its vision of becoming a world-class energy company that is environmentally conscious (Information reported on ptba.co.id). Direct interviews with the subjects of the study and the distribution of questionnaires to respondents are the methods used to collect primary data. Employees of PT. Bukit Asam Tbk Tanjung Enim were chosen by the author to participate in this research as respondents[20], [21]. In this study, secondary data is used to describe PT. Bukit Asam Tbk Tanjung Enim in general. The data collection technique in this study employs the questionnaire and observation method. A questionnaire is an effective data collection method if the researcher has a clear understanding of the variables to be measured and the possible reactions of the respondents (Sugiyono, 2017). The type of questionnaire used is a Google Form, ready to be distributed, with predetermined options. Each option is scored based on the following Likert scale.

Table 1. Likert Scale

Position Statement	Positive	Negative
Strongly Agree	5	1
Agree	4	2
Hesitant	3	3
Disagree	2	4

Strongly Disagree	1	5

Observation Method was The number of respondents observed is not always large; therefore, the data collection approach used is observation. This data collection technique includes observing human behavior, work processes, or natural events (Sugiyono, 2017). In this study, the data is used for quantitative analysis using statistical formulas for each participant's response, categorized from very positive to very negative. Once the data is collected, it is processed using the SPSS (Statistical Product and Service Solution) program, and techniques related to green human resource management and its impact on the green behavior of employees at PT. Bukit Asam Tbk are discussed.

3. RESULT AND DISCUSSIONS

3.1 RESULT

Description of Employee Responses Regarding Green Recruitment and Selection (X1).
Employee responses regarding Green Recruitment and Selection (X1) at PT. Bukit Asam Tbk can be presented in table 2 as follows:

Table 2. Employee responses about Green Recruitment and Selection (X1)

No	Statement	Mean
1	How much do you agree that the environmental policies and practices of an organization influence your decision to apply for a job there?	4,23
2	How much do you agree that organizations should have certifications or awards related to sustainability and environmentally friendly practices when choosing a workplace?	4,27
3	How do you agree that the company's reputation as an organization that cares about the environment influences your interest in applying for a job there?	4,29
4	How much do you agree that companies should actively promote environmental initiatives and programs in their marketing and branding strategies?	4,41
5	How do you agree that companies committed to environmentally friendly practices are more attractive to you as a job candidate?	4,29
6	Seberapa setuju anda bahwa perusahaan harus memiliki budaya yang mendukung dan mempromosikan tanggung jawab lingkungan di antara karyawan?	4,35
	Mean	**4,31**

Table 2 illustrates that the average employee response to the Green Recruitment and Selection (X1) variable is 4.31. The fact that this rating falls into the "Very Good" category indicates that most respondents believe the company's environmentally friendly recruitment and selection practices are excellent.
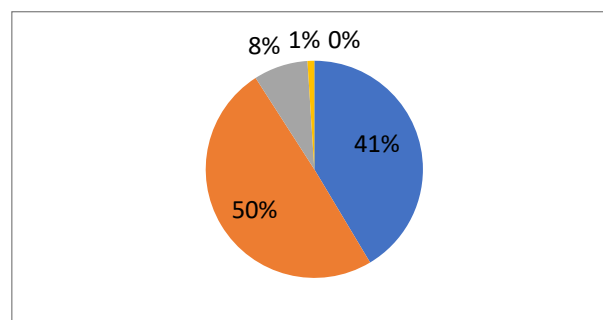

Figure 1. Chart Green recruitment selection (X1)

Based on Figure 1, it can be seen that the respondents in this study chose from the options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. A total of 236 respondents, or 41% of the total, selected Strongly Agree; 282 respondents, or 49% of the total, selected Agree; 46 respondents, or 8% of the total, selected Neutral; 5 respondents, or 1% of the total, selected Disagree; and 1 respondent, or 0% of the total,

selected Strongly Disagree.

Description of Responses About Green Training (X2)
The following is a circle diagram of employee responses to Green recruitment selection (X1):
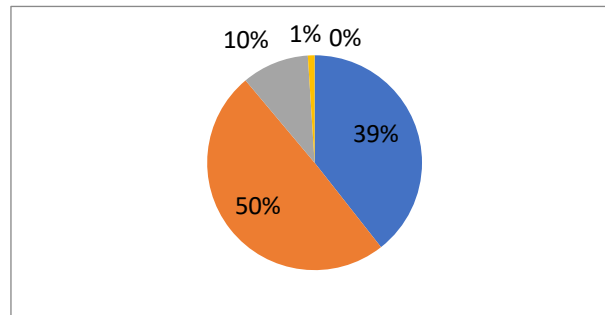

Figure 2. Chart Green Training (X2)

Based on Figure 2, it can be seen that the respondents in this study chose from the options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. A total of 370 respondents, or 39% of the total, selected Strongly Agree; 470 respondents, or 49% of the total, selected Agree; 93 respondents, or 10% of the total, selected Neutral; 14 respondents, or 1% of the total, selected Disagree; and 3 respondents, or 0% of the total, selected Strongly Disagree. The employee responses regarding Green Recruitment and Selection (X1) at PT. Bukit Asam Tbk can be presented in Table 4.6 as follows:

Table 3. Employee Responses About Green Training (X2)

No	Statement	Mean
1	The company trained employees to behave environmentally friendly in the last year	4,34
2	I am satisfied with the environmental training for hourly employees at our facility	4,07
3	Employees every day have a lot opportunity to use their environmental training	4,12
4	The company trains employees to behave environmentally friendly	4,33
5	An adequate amount of training in environmental issues is provided to employees	4,24
6	I am satisfied with the quality of training for employees at the company	4,15
7	Green training is effective in helping improve employee green behavior	4,34
8	The company discussed the importance of environmentally friendly concepts for employees' future careers	4,27
9	How important has this training been to help you in implementing environmentally friendly practices in the workplace?	4,35
10	Employees know their specific green targets, goals and responsibilities	4,26
	Mean	**4,25**

Table 3 shows that the average employee response to the Green Training (X2) variable is 4.25. The fact that this rating falls into the "Good" category indicates that most respondents believe the company's environmentally friendly training programs are beneficial.

Description of Responses on Green Performance Management (X3)
Below is the pie chart depicting employee responses to Green Recruitment and Selection (X1):
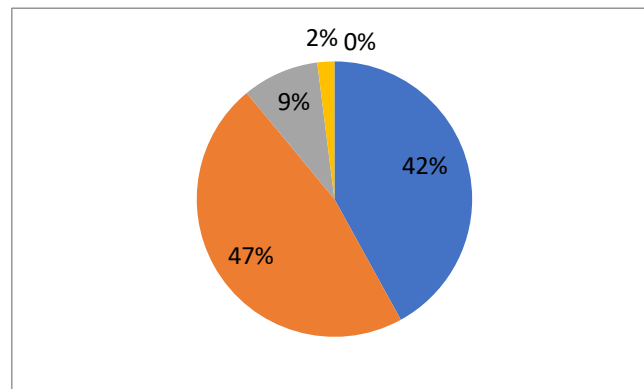
Figure 3. Charts Green Performance Management

Based on Figure 3, it can be seen that respondents in this study chose from the options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. A total of 320 respondents, or 42% of the total, selected Strongly Agree; 358 respondents, or 47% of the total, selected Agree; 66 respondents, or 9% of the total, selected Neutral; 13 respondents, or 2% of the total, selected Disagree; and 3 respondents, or 0% of the total, selected Strongly Disagree. Employee responses regarding Green Performance Management (X3) at PT. Bukit Asam Tbk can be presented in Table 4.8 as follows:

Table 4. Employee Responses About Green Performance Management (X3)

No	Statement	Mean
1	The company includes environmentally friendly aspects in employee assessments	4,15
2	Provide regular feedback to employees or teams to achieve environmental goals or improve their environmental performance	4,18
3	Employees know their specific green targets	4,13
4	Employees know their specific green responsibilities	4,27
5	The company's staff and managers understand the importance of environmentally friendly concepts	4,41
6	The company always invites employees to think innovatively in their work	4,52
7	Implementing sanctions for employees who do not comply with green management policies is important to ensure the success of the GHRM program	4,28
8	Is the application of sanctions important in encouraging compliance with green management goals in companies?	4,36
	Mean	**4,29**

Table 4 shows that the average employee response to the Green Performance Management (X3) variable is 4.2. The fact that this score falls into the "Good" category indicates that most respondents believe the company's use of environmentally friendly performance management is commendable.

Description of Responses on Green Pay & Reward (X4)
Employee responses regarding Green Pay & Reward (X4) at PT. Bukit Asam Tbk can be presented in Table 5 as follows:

Table 5. Employee Responses About Green Pay & Rewards (X4)

No	Statement	Mean
1	The company routinely provides special rewards to employees who contribute to green innovation in the work environment	4,18
2	I feel motivated to pay more attention to the environment because of the special rewards given by the company	4,17
3	Providing financial & non-financial awards for employees who have good environmental performance	4,30

4	I feel motivated to pay more attention to the environment because of the special awards given by the company	4,2
5	The company provides monetary rewards to employees who actively contribute to improving green environmental performance	4,12
6	I receive monetary rewards that reflect my performance in maintaining a green work environment	4,08
7	Communicate / socialize the environmental advantages provided by employees	4,32
8	The company pays more attention to employees who clean their work desks/work locations	4,09
	Mean	**4,18**

Table 5 shows that the average employee response to the Green Pay & Reward (X4) variable is 4.18. This rating falls into the "Good" category, indicating that most respondents believe the company's green pay and reward programs are beneficial.
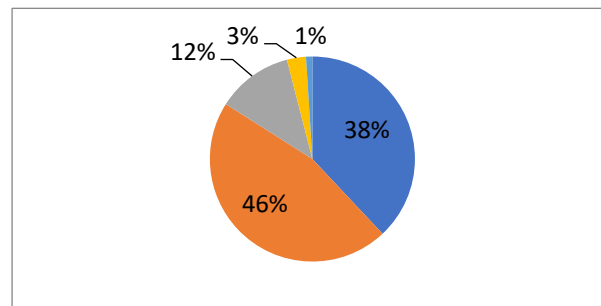

Figure 4. Charts Green pay & rewards

Based on Figure 4, it can be seen that respondents in this study chose from the options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. A total of 294 respondents, or 38% of the total, selected Strongly Agree; 351 respondents, or 46% of the total, selected Agree; 92 respondents, or 12% of the total, selected Neutral; 23 respondents, or 3% of the total, selected Disagree; and 4 respondents, or 0% of the total, selected Strongly Disagree.

Description of Responses on Green Involvement (X5)
Employee responses regarding Green Involvement (X5) at PT. Bukit Asam Tbk can be presented in Table 6 as follows:

Table 6. Employee Responses About Green Involvement (X5)

No	Statement	Mean
1	How much do you agree that companies must have a clear green vision?	4,45
2	How much do you agree that this company is committed to supporting environmentally friendly practices?	4,47
3	Employees have adequate access to HR about green initiatives	4,28
4	Employees feel supported to implement environmentally friendly practices	4,36
5	How important do you think email channels are in increasing awareness and reducing paper waste	4,32
6	The organization offers a forum for staff to improve environmental behavior and exchange their knowledge	4,32
7	Employees participate in problem solving groups related to environmental issues	4,26
8	Provide opportunities for employees to get involved and participate in green suggestion schemes and joint consultations for solving environmental problems	4,26
9	Top managers use teamwork to successfully manage and generate awareness of the company's environmental problems	4,34

No	Statement	Mean
10	Organizations involve employees in formulate environmental strategies	4,32
	Mean	**4,34**

Based on table 6, it can be illustrated that employee responses to the Green Involvement variable (X5) have an average of 4.34. This value is included in the "Very Good" category, which means that the majority of respondents think that Green Involvement in the company is very good.
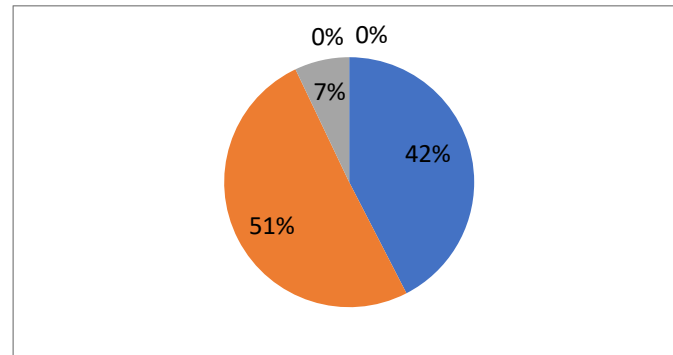

Figure 5. Charts Green Involvement

Based on Figure 5, it can be seen that respondents in this study chose from the options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. A total of 402 respondents, or 42% of the total, selected Strongly Agree; 475 respondents, or 50% of the total, selected Agree; 70 respondents, or 7% of the total, selected Neutral; 0 respondents selected Disagree; and 0 respondents selected Strongly Disagree.

Description of Responses on Employee Green Behavior (Y)
Employee responses regarding Employee Green Behavior (Y) at PT. Bukit Asam Tbk can be presented in Table 7 as follows:

Table 7. Employee Responses About Employee Green Behavior (Y)

No	Statement	Mean
1	Employees receive management knowledge related to the environment to create understanding related to environmental issues	4,32
2	Employees receive management knowledge related to the environment to create self-development	4,32
3	Employees are able to implement green behavior in daily activities	4,43
4	Employees prioritize the environment in daily decision making	4,15
5	Employee green behavior plays an important role in company sustainability	4,34
6	The tasks given by the leadership are in accordance with work that cares about the environment	4,23
	Mean	**4,30**

Table 7 shows that the average employee response to the Employee Green Behavior (Y) variable is 4.30. This value falls into the "Very Good" category, indicating that most respondents believe the environmentally friendly behavior demonstrated by the company's employees is very good.
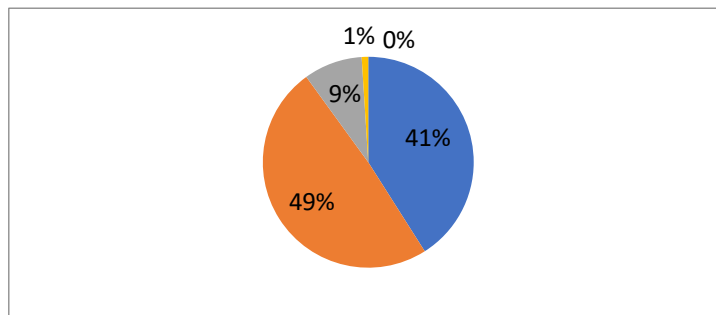
Figure 6. Charts of employee green behavior

Research participants chose from the options: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree, as shown in Figure 4.8. Strongly Agree represents 235 respondents, or 41% of the total; Agree represents 278 respondents, or 49% of the total; Neutral represents 52 respondents, or 9% of the total; Disagree represents 5 respondents, or 1% of the total; and Strongly Disagree represents 0 respondents, or 0% of the total.

3.2 DISCUSSIONS

Based on the research results, the author describes the independent variables as green recruitment selection, green training, green performance management, green pay & reward, green involvement, and the dependent variable as environmentally friendly employee behavior. Primary data, collected through questionnaires from 95 employees of PT. Bukit Asam Tbk, were used for this study. The research aims to assess the impact of Green Recruitment Selection, Green Training, Green Performance Management, Green Pay & Reward, and Green Involvement on the green behavior of employees at PT. Bukit Asam Tbk.

a) The Influence of Green Recruitment Selection (X1) on Employee Green Behavior (Y)

Based on the research conducted with employees at PT. Bukit Asam Tbk, the test results for the green recruitment selection variable (X1) showed a value of 0.644. Since $T_{count} < T_{table}$ (0.644 < 1.662), it indicates that green recruitment selection does not have a significant impact on employee green behavior. This finding contradicts previous studies, such as the research by Renwick et al. (2013), which suggested that candidates interested in working for environmentally conscious organizations would positively influence employee green behavior.

The insignificance of the impact of green recruitment selection at PT. Bukit Asam may be due to the green recruitment selection policy being symbolic and not consistently implemented in the company's recruitment process and daily operations. This is consistent with the study by Dumont et al. (2017), which stated that GHRM practices, including green recruitment, do not automatically enhance employee green behavior. The effect is more dependent on employees' perceptions of the psychological green climate and their personal green values. From the above explanation, it can be concluded that green recruitment selection might have an impact if the company's implementation is well-established or if new employees fully understand and have already adopted the company's green values in their own lives.

b) The Influence of Green Training (X2) on Employee Green Behavior (Y)

The test results for the green training variable (X2) showed a value of 3.498. Since Tcount > Ttable (3.498 > 1.662), it indicates that the more frequently green training is conducted, the more likely it is to foster green behavior among employees within the company. By receiving this training, employees become more aware of the importance of environmental preservation. Therefore, green training is a crucial strategy for companies aiming to encourage green behavior among employees and achieve long-term sustainability goals.

This means there is a significant impact on employee green behavior. These findings are in line with previous research, such as the study by Resti Eva Mayangsari (2020), which explained that training on green environments influences employee discipline in environmental care. From the above explanation, it can be understood that green training influences employees' attitudes, making them more environmentally conscious. Green training can provide training focused on sustainable and eco-friendly practices. Green training is a workplace training and continuing education program designed to help companies achieve their goals in environmental management. (Anindyah et al., 2023).

c) The Influence of Green Performance Management on Employee Green Behavior

Based on research conducted with employees at PT. Bukit Asam Tbk, the test results for the green performance

management variable (X3) showed a value of -0.024. Since $T_{count} < T_{table}$ (-0.024 < 1.662), it indicates that green performance management does not have a significant impact on employee green behavior. This may be due to a misalignment between green performance assessments and the incentives received.

These findings contradict previous studies, such as the research by Renwick et al. (2013), which discussed how companies can achieve greater productivity, quality, performance, waste reduction, and profits by offering environmentally friendly opportunities to employees to enhance their performance and motivate them with green rewards. The insignificance of the impact of green performance management at PT. Bukit Asam may be due to employees perceiving green performance assessments as mere formalities, especially if there are no tangible incentives or rewards linked to achieving environmental targets. This aligns with the research by Renwick et al. (2013), which stated that while green performance management aims to assess and encourage eco-friendly behavior in the workplace, there is often no direct link to changes in employee behavior. From the above explanation, it can be concluded that green performance management might have an impact if green performance indicators are clear and consistent, helping employees understand how their performance is measured in terms of sustainability.

d) The Influence of Green Pay & Reward on Employee Green Behavior

Green pay & reward have a significant impact on employee green behavior at PT. Bukit Asam Tbk. This is evidenced by the SPSS version 29 T-test results, where the significance value for green pay & reward is 0.014, which is less than 0.05, and the regression coefficient value is 2.504, which is greater than 1.662. Therefore, H_0 is rejected, and H_a is accepted, meaning green pay & reward influence employee green behavior. This result indicates that increasing green pay & reward for employees will enhance their green behavior. Thus, the relationship between the green pay & reward variable and employee green behavior is directly proportional or has a positive impact. This finding aligns with the research conducted by Govindarajulu & Daily (2004) and Renwick et al. (2013), which explains that there are three different ways to provide green rewards and benefits: in cash, such as bonuses or financial incentives for staff to purchase green products; in non-cash forms, such as gift cards; or in recognition forms, such as daily recognition.

e) The Influence of Green Involvement on Employee Green Behavior

Green involvement significantly impacts employee green behavior at PT. Bukit Asam Tbk. This is evidenced by the SPSS version 29 T-test results, where the significance value for green involvement is 0.038, which is less than 0.05, and the regression coefficient value is 2.104, which is greater than 1.662. Therefore, H_0 is rejected, and H_a is accepted, meaning green involvement influences employee green behavior.

This finding indicates that increasing green involvement among employees will enhance their environmentally friendly behavior. Thus, the relationship between the green involvement variable and employee green behavior is directly proportional or has a positive impact. This finding is consistent with Matthes et al. (2014), which found that workers' awareness of their environmental protection duties increased with their involvement in environmental prevention initiatives. Therefor, green involvement allows increasing values and capacity to overcome environmental problems by increasing public knowledge about environmental management techniques and fostering a culture of environmental protection (Srivastava & Shree, 2018).

f) The Combined Influence of Green Recruitment Selection, Green Training, Green Performance Management, Green Pay & Reward, and Green Involvement on Employee Green Behavior

The variables "Green Recruitment Selection," "Green Training," "Green Performance Management," "Green Pay & Reward," and "Green Involvement" together influence the green behavior of employees at PT. Bukit Asam Tbk. This is evidenced by the SPSS output showing a combined value of 50.125 for these variables. The F-test results also show a significance value of less than 0.05 (0.000), indicating a simultaneous relationship between these variables and employee green behavior at PT. Bukit Asam Tbk.

This finding aligns with the research by Dumont et al. (2017), which stated that when green recruitment, green training, and green performance management are applied simultaneously, they create a green psychological climate in the workplace. The combination of these practices strengthens green values among employees and encourages them to act in line with the company's sustainability goals.

The findings of this research demonstrate that Green Human Resource Management (GHRM) practices play a significant role in shaping employee green behavior at PT. Bukit Asam Tbk. Specifically, green training, green pay & rewards, and green involvement were found to have a positive and significant impact on fostering

environmentally friendly behaviors among employees, indicating that focused GHRM strategies can effectively promote sustainability within the organization. However, green recruitment selection and green performance management did not show a significant influence, suggesting that these practices may require re-evaluation or stronger implementation to align with the company's environmental goals. The results highlight the need for companies to prioritize ongoing green training, recognize employees for their eco-friendly contributions, and involve them actively in sustainability efforts. By enhancing these dimensions of GHRM, organizations can strengthen their environmental performance and contribute to broader sustainability objectives. For PT. Bukit Asam Tbk and other companies in environmentally impactful industries, this research underscores the importance of strategic, well-implemented GHRM practices in driving a more sustainable future.

4. CONCLUSIONS

The article investigates the impact of Green Human Resource Management (GHRM) practices on employee green behavior at PT. Bukit Asam Tbk, a coal mining company. Using a quantitative approach, the study collected data from 95 employees through questionnaires and analyzed it using SPSS. The findings revealed that green training, green pay & rewards, and green involvement significantly influence employee green behavior. However, green recruitment selection and green performance management did not have a notable impact. This suggests that while some GHRM practices effectively foster environmentally friendly behavior, others require better implementation or alignment with company goals. The study emphasizes the importance of consistent green training and recognition of eco-friendly contributions to enhance sustainability within the organization. These insights offer actionable strategies for PT. Bukit Asam Tbk and similar companies in environmentally impactful industries to improve their GHRM practices and contribute to long-term environmental sustainability

5. REFERENCES

[1] A. S. Silalahi, A. S. Lubis, and P. Gultom, "International Journal of Energy Production and Management Impacts of PT Pertamina Geothermal Sibayak ' s Exploration on Economic , Social , and Environmental Aspects : A Case Study in Semangat Gunung Village , Karo District," vol. 9, no. 3, pp. 161–170, 2024.

[2] S. Sinulingga, J. L. Marpaung, and H. S. Sibarani, "International Journal of Sustainable Development and Planning Sustainable Tourism Development in Lake Toba : A Comprehensive Analysis of Economic , Environmental , and Cultural Impacts," vol. 19, no. 8, pp. 2907–2917, 2024, [Online]. Available: https://www.iieta.org/journals/ijsdp/paper/10.18280/ijsdp.190809.

[3] F. R. Sofiyah, A. Dilham, and A. S. Lubis, "Mathematical Modelling of Engineering Problems The Impact of Artificial Intelligence Chatbot Implementation on Customer Satisfaction in Padangsidimpuan : Study with Structural Equation Modelling Approach," vol. 11, no. 8, pp. 2127–2135, 2024, [Online]. Available: https://iieta.org/journals/mmep/paper/10.18280/mmep.110814.

[4] P. Gultom, E. Sorta, M. Nababan, and J. L. Marpaung, "Mathematical Modelling of Engineering Problems Balancing Sustainability and Decision Maker Preferences in Regional Development Location Selection : A Multi-criteria Approach Using AHP and Fuzzy Goal Programming," vol. 11, no. 7, pp. 1802–1812, 2024.

[5] Tulus, S. Sy, K. A. Sugeng, R. Simanjuntak, and J. L. Marpaung, "Improving data security with the utilization of matrix columnar transposition techniques," E3S Web Conf., vol. 501, 2024, doi: 10.1051/e3sconf/202450102004.

[6] F. R. Sofiyah, A. Dilham, A. Q. Hutagalung, Y. Yulinda, A. S. Lubis, and J. L. Marpaung, "The chatbot artificial intelligence as the alternative customer services strategic to improve the customer relationship management in real-time responses," Int. J. Econ. Bus. Res., vol. 27, no. 5, pp. 45–58, 2024, doi: 10.1504/IJEBR.2024.139810.

[7] Tulus, Sutarman, M. R. Syahputra, and T. J. Marpaung, "Computational analysis of stability of wave propagation against submerged permeable breakwater using hybrid finite element method," AIP Conf. Proc., vol. 3029, no. 1, pp. 1–3, 2024, doi: 10.1063/5.0192099.

[8] Tulus, Sutarman, M. R. Syahputra, and T. J. Marpaung, "Computational analysis of stability of wave propagation against submerged permeable breakwater using hybrid finite element method," AIP Conf. Proc., vol. 3029, no. 1, 2024, doi: 10.1063/5.0192099.

[9] Tulus, J. L. Marpaung, T. J. Marpaung, and Suriati, "Computational analysis of heat transfer in three types of motorcycle exhaust materials," J. Phys. Conf. Ser., vol. 1542, no. 1, 2020, doi: 10.1088/1742-6596/1542/1/012034.

[10]   Tulus, T. J. Marpaung, and J. L. Marpaung, "Computational Analysis for Dam Stability Against Water Flow Pressure," J. Phys. Conf. Ser., vol. 2421, no. 1, 2023, doi: 10.1088/1742-6596/2421/1/012013.

[11]   S. Sy, K. A. Sugeng, R. Simanjuntak, and J. L. Marpaung, "Fibonacci Noise Modification on Data Encryption," Kexue Tongbao/Chinese Sci. Bull., vol. 69, no. 05, pp. 2145–2155, 2024, [Online]. Available: https://www.kexuetongbao-csb.com/article/fibonacci-noise-modification-on-data-encryption.

[12]   P. Gultom, E. S. M. Nababan, J. L. Marpaung, and V. R. Agung, "Balancing Sustainability and Decision Maker Preferences in the Palm Oil Supply Chain : A Multi- Criteria Supplier Selection Approach with Analytical Hierarchy Process and Fuzzy Goal Programming," Kexue Tongbao/Chinese Sci. Bull., vol. 69, no. 05, pp. 2079–2095, 2024, [Online]. Available: https://www.kexuetongbao-csb.com/article/balancing-sustainability-and-decision-maker-preferences-in-the-palm-oil-supply-chain-a-multi-criteria-supplier-selection-approach-with-analytical-hierarchy-process-and-fuzzy-goal-programming.

[13]   Tulus, M. M. Rahman, Sutarman, M. R. Syahputra, T. J. Marpaung, and J. L. Marpaung, "Computational Assessment of Wave Stability Against Submerged Permeable Breakwaters: A Hybrid Finite Element Method Approach," Math. Model. Eng. Probl., vol. 10, no. 6, pp. 1977–1986, 2023, doi: 10.18280/mmep.100607.

[14]   Erwin, C. D. Hasibuan, D. A. S. Siahaan, A. Manurung, and J. L. Marpaung, "Stability Analysis of Spread of Infectious Diseases COVID-19 Using SEIAR-V1V2Q Model for Asymptomatic Condition with Runge-Kutta Order 4," Math. Model. Eng. Probl., vol. 11, no. 5, pp. 1348–1354, 2024, doi: 10.18280/mmep.110526.

[15]   A. S. Lubis and Alfi Amalia, "Employee Performance Assessment With Human Resources Scorecard And AHP Method (Case Study : PT PLN (PERSERO) North Sumatra Generation)," J. Manag. Anal. Solut., vol. 1, no. 2, pp. 72–79, 2021, doi: 10.32734/jomas.v1i2.6287.

[16]   T. J. Marpaung, D. S. Br. Ginting, A. Candra, and J. L. Marpaung, "Active learning for middle school based on information technology in SMA Negeri 1 Dolok Batu Nanggar," ABDIMAS Talent. J. Pengabdi. Kpd. Masy., vol. 5, no. 2, pp. 127–132, 2020, doi: 10.32734/abdimastalenta.v5i2.4611.

[17]   P. Sembiring, Suyanto, and J. L. Marpaung, "Hydroponic Provisions for Food Production During the Covid-19 Pandemic Necessitated Restricted Land Use," ABDIMAS Talent. J. Pengabdi. Kpd. Masy., vol. 8, no. 2, pp. 822–834, 2023, doi: 10.32734/abdimastalenta.v8i2.15074.

[18]   Tulus, T. J. Marpaung, Suriati, J. L. Marpaung, R. Marpaung, and F. Sutanto, "Empowerment of Groups of Society Through Creative Economy Production Convection and Sablon in SMPS PTPN 4 Dolok Ilir Simalungun," ABDIMAS Talent. J. Pengabdi. Kpd. Masy., vol. 8, no. 2, pp. 723–732, 2023, doi: 10.32734/abdimastalenta.v8i2.14238.

[19]   Ismayadi et al., "The Effectiveness of Digital Literacy in Improving Community Skills in the Tanjung Kasau Plantation Village," ABDIMAS Talent. J. Pengabdi. Kpd. Masy., vol. 8, no. 2, pp. 931–936, 2023, doi: 10.32734/abdimastalenta.v8i2.11314.

[20]   S. Sinulingga, V. A. Nasution, A. Meutia, and S. Indra, "Automated and Measured Managerial Systems in the Management of Independent Tourism Villages : A Case Study of Parsingguran II Village , Polung Subdistrict , Humbang Hasundutan Regency," vol. 3, no. 9, pp. 527–540, 2024.

[21]   R. P. Armidin, T. J. Marpaung, and A. Satria, "Increasing Productivity and Local Product Branding Optimization and Food Security in Desa Perkebunan Tanjung Kasau," vol. 8, no. 2, pp. 1318–1331, 2023.

[22]   Afsar, B., Cheema, S., & Javed, F. (2018). Activating employee's pro-environmental behaviors: The role of CSR, organizational identification, and environmentally specific servant leadership. *Corporate Social Responsibility and Environmental Management*, *25*(5), 904–911.

[23]   Anindyah, A. M., Permono, S., Manajemen, N. P., Ekonomi, F., & Bisnis, D. (2023). Pengaruh Green Recruitment Dan Green Training Terhadap Kinerja Karyawan Menggunakan Inovasi Sebagai Variabel Mediasi Pada Perusahaan Telekomunikasi Di Surakarta. Jurnal Bisnis Dan Manajemen, 3(5), 1097–1108. https://ejournal.penerbitjurnal.com/index.php/business/article/view/497

[24]   Chou, C.-J. (2014). Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes. Tourism Management, 40, 436–446.

[25]   Chuah, S., Mohd, I., … J. K.-G. B. &, & 2021, U. (2021). Impact of Green Human Resource Management Practices Towards Green Lifestyle and Job Performance. Global Business and Management Research: An International Journal, 13(4), 13–23. http://www.gbmrjournal.com/pdf/v13n4/V13N4-2.pdf

[26]   Dodman, D. (2009). Blaming cities for climate change? An analysis of urban greenhouse gas emissions inventories. Environment and Urbanization, 21(1), 185–201.

[27]   Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. Human resource

management, 56(4), 613-627.

[28] Fitriyanti, R. (2016). Pertambangan Batubara: Dampak Lingkungan, Sosial Dan Ekonomi. Jurnal Redoks, 1(1).

[29] Govindarajulu, N., & Daily, B. F. (2004). Motivating employees for environmental improvement. Industrial Management & Data Systems, 104(4), 364–372.

[30] Kim, Y. J., Kim, W. G., Choi, H.-M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. International Journal of Hospitality Management, 76, 83–93.

[31] Leung, Y. W., & Rosenthal, S. (2019). Explicating perceived sustainability-related climate: A situational motivator of pro-environmental behavior. Sustainability, 11(1), 231.

[32] Matthes, J., Wonneberger, A., & Schmuck, D. (2014). Consumers' green involvement and the persuasive effects of emotional versus functional ads. Journal of Business Research, 67(9), 1885–1893.

[33] Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. International Journal of Management Reviews, 15(1), 1–14.

[34] Resti Eva Mayangsari1, L. C. N. (2020). The Effect Of Green Recruitment, Green Training On Environmental Performance In Pt Wira Cipta Perkasa Using Employee Green Behavior As Mediation Variable. 2(1), 112–124. https://doi.org/10.31933/DIJMS

[35] Srivastava, A. P., & Shree, S. (2018). Examining the effect of employee green involvement on perception of corporate social responsibility: Moderating role of green training. Management of Environmental Quality: An International Journal, 30(1), 197–210.

[36] Irwandy, A. (2022). *Good Mining Practices Award 2022, Apresiasi Pemerintah Kepada Perusahaan Pertambangan*. https://www.esdm.go.id/id/media-center/arsip-berita/good-mining-practices-award-2022-apresiasi-pemerintah-kepada-perusahaan-pertambangan

[37] Ptba.co.id. (2023). Taat Pengelolaan Lingkungan, Bukit Asam (PTBA) Dianugerahi 2 PROPER Emas 2023. https://www.ptba.co.id/berita/taat-pengelolaan-lingkungan-bukit-asam-ptba-dianugerahi-2-proper-emas-2023-1819