

The Impact of Green Human Resource Management on Environmental Performance among Employees of Environmentally Friendly Companies in Batam

Saidah Dulfi¹, Evi Silvana Muchsinati²

¹2141062.saidah@uib.edu, ²evi@uib.ac.id

^{1,2} Management Study Program, Business and Management Faculty,
Universitas Internasional Batam

Abstract. The company's efforts to achieve long-term sustainability by emphasizing the importance of Environmental Performance (EP) are in line with the goals of the Sustainable Development Goals (SDGs), where environmental preservation is crucial for maintaining sustainability. The manufacturing industry sector has been implementing Green Human Resource Management (GHRM) practices in companies to address this issue. This study aims to demonstrate that GHRM variables influence Environmental Performance through Organizational Citizenship Behavior (OCB) as a mediating variable. The sample for this study consisted of 363 respondents from seven environmentally friendly companies in Batam. Data analysis was conducted using Partial Least Squares (PLS) by distributing questionnaires to employees of these companies. The results indicate that while GHRM does not have a significant effect on environmental performance, OCB does have a significant impact on EP.

Keywords: Green Human Resource Management (GHRM), Environmental Performance (EP), Organizational Citizenship Behavior (OCB), environmentally friendly companies.

1 Introduction

Indonesia's economic growth is limited by a decline in exports of goods to the country. However, Indonesia must make significant improvements in inflation conditions in 2022, leading to a significant increase [1]. Additionally, forecasted climate change and geopolitical risks in 2024 could end up with higher energy and food price tags, which could prop up inflation once again [2]. Greenhouse gas emissions are the cause of global climate change. In estimates, this could lead to the Indonesian economy reaching 3.45% of its GDP [3]. The United Nations' Sustainable Development Goals (SDGs) seek to combat global problems such as extreme hunger, climate change, cultural conflict, and limited resources [4].

Apart from that, the SDGs also want to create an international development agenda that opens up many new opportunities for sustainable development [5]. With the SDGs, it will stimulate the economy creatively and improve economic and social welfare [6]. Besides that, there are still many companies that produce waste and air pollution. This requires the company

to process it again in order to minimize the negative impacts that could arise and extend the legal period for the company to operate [7]. Therefore, the government and several institutions emphasize the relevance of implementing environmentally friendly practices such as GHRM as part of the SDGs to try to alleviate some of these challenges [8]. In recent years, companies have placed environmental and social aspects of their operations in an effort to address long-term development challenges [9].

Initial studies have proven that the use of green human resource management (GHRM) influences workers in meeting their goals [10]. However, research on social HR practices shows GHRM processes do not have a direct impact on staff opinions and views [11]. Manufacturing service companies in Indonesia follow environmentally friendly recruitment, training and payment practices, as well as other environmentally friendly practices [12]. Green programs were not implemented in the past, but corporate citizenship has since been used to implement green program behavior. Many stakeholders are concerned about the environment because manufacturing activities impact the environment, which is why it leads to environmentally friendly programs [13]. Green programs were not implemented in the past, but corporate citizenship has since been used to implement green program behavior. Many stakeholders are concerned about the environment because manufacturing activities impact the environment, which is why it leads to environmentally friendly programs. [14]. The program also works to improve environmental performance.

According to previous research, green human resource management (GHRM) has a significant effect on organizational citizenship behavior (OCB) [15][16]. Apart from that, based on previous research, employee initiative (OCB) in caring for environmental damage and preservation is an effort to sustain a company's operations [17][18]. Companies in Batam, like other industrial areas, face significant environmental challenges due to their manufacturing operations. Issues include the negative environmental impacts of industrial production and the need to develop environmentally friendly management practices to mitigate these impacts [19]. In addition, the issue of understanding how GHRM can influence employee behavior regarding the environment is also a main focus. Therefore, the GRHM program is used by a handful of producers in Batam. However, the manufacturer from Batam who is holding this program is trying to in still all aspects of the company's human resources so that they become part of the company culture and overcome the problem of production waste by manufacturers [20]. Green hiring attracts potential talent to companies [21]. Instilling environmentally friendly concepts and habits is a key component of environmentally friendly training for future company development [22]. Environmentally friendly management and compensation improve a company's environmental performance through regulations that are essentially environmentally friendly [23][24]. Based on previous research, the success of the Green Human Resource Management (GHRM) program has a significant impact on employee, company, and environmental performance [25][26]. The author also explores how GHRM, which influences corporate environmental performance through organizational citizenship behavior (OCB) practices, affects society, the business world, and the manufacturing sector in Batam. The aim of this article is to study the impact of GHRM on corporate environmental performance, study organizational citizenship behavior (OCB) as a mediator between GHRM and EP, and study environmental performance (EP) assignments.

Research on how GHRM improves environmental performance through the use of corporate citizenship behavior is still scarce [27][28][29]. However, based on this research, GHRM does not have a significant effect on OCB, but OCB has a significant effect on EP. The results of this research are different from previous research on the same topic. Although there is previous research linking GHRM with various aspects of organizational performance [30],

this research identifies a specific gap related to the lack of understanding of how OCB (as a mediator) influences the relationship between GHRM and corporate environmental performance [31][32][33]. Previous research tends to focus more on the direct impact of GHRM without considering the role of mediators such as OCB [34][35].

This research provides significant theoretical and practical contributions. Theoretically, this research expands understanding of the mechanisms linking GHRM, OCB, and corporate environmental performance, especially in the manufacturing context in Batam. Practically, the results of this research can provide guidance for companies in Batam and perhaps other industrial areas to implement more effective GHRM practices in an effort to improve their environmental performance.

2 Literature Review

The Relationship Between Green Human Resource Management and Organizational Citizenship Behavior

Environmentally friendly human resource management is realized in the form of a commitment by the company and its employees to implement environmental management in an environmentally friendly manner [36]. GHRM is needed because it can implement recruitment, evaluation, training, and rewards for employees [37]. OCB is a person's behavior in an effort to improve the environment. As an example of OCB, namely an employee's behavior in sharing knowledge about preventing pollution in the company environment and providing solutions to that problem [38]. Green Human Resource Management (GHRM) has a positive influence on organizational citizenship behavior for the environment (OCB) [39].

H1: Green Human Resource Management (GHRM) has a positive influence on Organizational Citizenship Behavior (OCB).

The Relationship Between Organizational Citizenship Behavior and Environmental Performance

The environment can be hurt or saved by human behavior. For such, it's vital that each worker learns organizational citizenship behavior (OCB). Employees that are versed in OCB are able to utilize human resources more efficiently as they are already aware of the value of environmental care behavior from both inside and outside the company. OCB behavior, like saving funds, cut lower on the use of paper to preserve an abundance of trees, and supporting environmentally friendly actions [40]. makes employees feel involved and valued by the company due to this support [41]. Positive impacts of OCB use include a drop in hazardous products and manufacturing waste, as well as greater dedication from company personnel to the environment [42]. An effective environmental management strategy supports a company's targets, including environmental performance [43]. Numerous studies have shown that OCB greatly impacts environmental performance [44] [45]. The results of this research show the value of OCB for environmental performance since it may boost EP.

H2: OCB has a positive influence on Environmental performance (EP).

Green Human Resource Management and Environmental Performance Through Organizational Citizenship Behavior

Based on previous research, GHRM positively influences human resource management practices so that employee behavior and motivation are more pro-environment and environmental performance improves [46][47]. Green Human Resource Management is an important plan to improve intellectual resources, improve company EP, and encourage

economic sustainability [48]. The aim of organizational training and human resource development is to improve employee skills and expertise in line with industry standards 4.0 [49]. Based on Boieral's research, organizational environmental goals are little aided by OCB [27]. Research shows that employees who engage in environmentally friendly practices will take the initiative to improve environmental performance and company excellence[50]. Workplace HR practices to prioritize the environment may increase OCB. According to academic research results OCB improves environmental performance via reducing waste, increasing employee behavior, and speeding achieving of green goals [51]. Given this, it is essential that employees understand the company's practices and make a commitment to protecting the environment [52]. GHRM promotes staff participation in environmental-related company efforts. Examples of pollution-avoiding and environmental impact reduction measures show a pro-environment corporate mentality [53]. However, there is previous research that states that GHRM will further increase its employees' OCB if they apply the EMS concept first. EMS is a pro-environmental managerial concept [54].

H3: GHRM has a positive influence on EP through OCB.

A Proposed Conceptual Model/Framework



Fig 1. The Proposed Conceptual Model/Framework

3 Research Methods

Methods of quantitative analysis are utilized in this research. Descriptive analysis uses samples gathered from a sample of respondents to explain the relationship between the variables and the research hypothesis (Sari et al., 2022). This method is employed for researchers because it may help in the fast and accurate gather of the necessary information. The approach of collecting info that is used is digital literature analysis. Government data, books that are accessible online as well as national and international research books are the materials that have been evaluated. The focus of this research are a variety of Indonesian manufacturers who have won awards as being environmentally conscious and who also use GHRM.

The object of this research is to identify six environmentally friendly manufacturers in Batam that are ISO certified. The sample used was 363 questionnaire respondents from the six manufacturers. The questionnaire used by the author in this research is a 1–5 Likert scale, where 1 means strongly disagree and 5 indicates strongly agree. The population of PT Batamindo Investment Cakrawala is 1000 employees. PT Telkom Indonesia has a population of 23,800. PT Apollo Solar Indonesia has a population of 1,000 employees. PT Schneider Electric has a population of 4,500 employees. PT Wiraja Yunan Internasional has a population of 200 employees. Apart from that, Apollo Solar Indonesia has a population of 1,000 employees. The low application of GHRM in manufacturing in Batam has attracted researchers to examine the effect of implementing Green Human Resource Management in the manufacturers chosen by

researchers on the company itself and the waste produced so that it can help convince other manufacturers of the importance of implementing environmentally friendly programs such as GHRM and OCB in companies.

4 Results

The majority of manufacturing employees are women because Batam's population is mostly women, and this manufacturing work can still be done by women. This statement is proven by research results showing that 60% of environmentally friendly manufacturing employees are women and 40% are men. Apart from that, many employees are aged 17–27 because they are of mature and productive age. This manufacturer is also very open to recruiting employees with a bachelor's degree to work in its office and high school graduates for its operations. This is evidenced by the fact that 58% of its employees are bachelor degree graduates work as staff and 14.9% are senior high school graduates working as a manufacturing operation.

Table 1. Demography

	Factors	Frequency	Percents
Gender	Female	218	60%
	Male	145	40%
Age	17-27	145	39,9%
	28-37	133	36,9%
	38-47	59	16,3%
	>47	25	6,9%
Last Education	Senior High School	54	14,9%
	Associate degree	48	13,2%
	Bachelor degree	213	58,7%
	Master Degree	48	13,2%

Source: Primary data (2024)

Validity and Reliability

The PLS algorithm method in Smart PLS 3 produces validity and reliability analyses as above. Based on the data above, all variables have passed as the numbers are above 0.6, as per the results of the Cronbach's alpha parameters, that are based on the validity and reliability tests done on the questionnaire data. The test results show that it passed as it was over 0.6 based on the composite reliability parameter [55]. For a result, it's decides that the research data test results are reliable. The test data has been considered valid since the Average Variance Extracted (AVE) parameter results are over 0.5 [56].

Table 2. Validity and reliability table

	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Environmental Performance	0,973	0,975	0,977	0,841
Organizational Citizenship Behavior	0,969	0,970	0,974	0,822
Green Human Resource Management	0,956	0,959	0,965	0,820

Source: Primary data (2024)

Discriminant Validity (Fornell Larcker Criterion)

The correlation between the OCB and EP variables does not meet the criteria, based on the results of the discriminant validity test (Fornell Larcker Criterion), as it is still larger at 0.963 than the correlation between the variables and the variable itself (0.907 and 0.917) [57]. Also, the OCB variable's correlation to GHRM fails to meet the criteria because it is greater at 0.927 than the correlation between this variable and the variable itself (0.907 and 0.906). However, because it is below the correlation between variables and the variable itself (0.906 and 0.917), the correlation between variables that meet the Fornell Larcker test criteria, GHRM and EP, is just 0.813 [58].

Table 3. Fornell Larcker Table

	Environmental Performance	Green Human Resource Management	Organizational Citizenship Behavioral
Environmental Performance	0.917		
Green Human Resource Management	0.813	0.906	
Organizational Citizenship Behavior	0.963	0.927	0.907

Source: Primary data (2024)

Cross Loadings

The cross loadings value shows that each indicator has converged with its respective variable with a minimum of more than 0.7 [59] and is highly correlated because the condition for passing the cross loadings test is a minimum value of 0.7. The results of discriminant validity with the cross-loading test show that all variables and constructs are able to explain the phenomenon being tested and are unique.

Table 4. Cross loading table

	Environmental Performance	Green Human Resource Management	Organizational Citizenship Behavior
EP 1	0.860	0.704	0.779
EP 2	0.959	0.844	0.907
EP 3	0.905	0.765	0.837
EP 4	0.954	0.872	0.941
EP 5	0.927	0.830	0.901
EP 6	0.864	0.827	0.862
EP 7	0.920	0.835	0.905
EP 8	0.943	0.848	0.920
GHRM 1	0.857	0.927	0.901
GHRM 2	0.890	0.963	0.923
GHRM 3	0.793	0.888	0.809
GHRM 4	0.781	0.905	0.811
GHRM 5	0.742	0.871	0.775
GHRM 6	0.768	0.876	0.804
OCB 1	0.851	0.835	0.896
OCB 2	0.944	0.922	0.971
OCB 3	0.855	0.778	0.849
OCB 4	0.886	0.828	0.924
OCB 5	0.881	0.901	0.930
OCB 6	0.856	0.787	0.871
OCB 7	0.810	0.835	0.882
OCB 8	0.897	0.829	0.924

Source: Primary data (2024)

Outer Loadings

The outer loadings analysis results show that all research indicators are > 0.6 [60], thus fitting the convergent validity criteria. Based on the results of outer loadings, all variables are valid.

Table 5. Outer loadings table

	Environmental Performance	Green Human Resource Management	Organizational Citizenship Behavior
EP 1	0.860		
EP 2	0.959		
EP 3	0.905		
EP 4	0.954		
EP 5	0.927		
EP 6	0.864		
EP 7	0.920		
EP 8	0.943		

GHRM_1		0.927	
GHRM_2		0.963	
GHRM_3		0.888	
GHRM_4		0.905	
GHRM_5		0.871	
GHRM_6		0.876	
OCB_1			0.896
OCB_2			0.971
OCB_3			0.849
OCB_4			0.924
OCB_5			0.930
OCB_6			0.871
OCB_7			0.882
OCB_8			0.924

Source: Primary data (2024)

Indirect Effect

Based on the results of the indirect effect test with bootstrapping in Smart PLS 3 software, GHRM has an indirect influence on environmental performance through organizational citizenship behavior because the T statistic is 19.031, which is above the value of 1.96 [61], and the P value is not more than 0.05.

Table 6. Indirect effect table

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
GHRM→ OCB → EP	0.901	0.902	0.047	19.031	0.000

Source: Primary data (2024)

Based on the results of the indirect effect test, the author's research hypothesis is as follows:

H1: Green Human Resource Management (GHRM) has a positive influence on Organizational Citizenship Behavior (OCB) (proven).

Hypothesis 1 is valid or proven because the P value is no more than 0.05 and the T statistic is 19.031 which is very above 1.96 (indirect effect validation limit). GHRM contains environmentally friendly practices that can form environmentally friendly values in individual employees [62]. Based on research, GHRM has a direct relationship to OCBE because OCBE can be in the form of employees' willingness to work together in an environmentally friendly company [63].

H2: OCB has a positive influence on Environmental performance (EP) (proven).

The P value of the relationship between these variables is 0.000, the T statistic is 19.031, so it is valid as an indirect effect. OCB is an important role in environmental performance (EP) because OCB is a behavior of voluntarily implementing GHRM so that environmental

performance increases [64]. For example, the performance of a school's teachers increases when the teacher's OCB is high [65].

H3: GHRM has a positive influence on EP through OCB (proven).

Hypothesis 3 shows that GHRM can influence EP indirectly because it is mediated by OCB. GHRM can be in the form of primary knowledge and encouragement for employees to have a sense of volunteerism (OCB) to do what has been taught regarding environmental conservation at GHRM. When employees are accustomed to doing their work in an environmentally friendly manner, the company's environmental performance will also improve [66][67].

Direct Effect

GHRM has an effect of -0.009 on EP based on the analysis of the direct effect test results. This means neither the GHRM level nor the EP level increase the GHRM. The T statistic results of the test and the P value, which indicate the two variables aren't significant to each other (T statistic = 0.142, < 1.96, and P value = 0.887, > 0.05), add to this finding [68]. In the meantime, GHRM's effect on OCB and OCB's effects on EP are significant because of the common T statistic of > 1.96 and the P value below 0.05.

Table 7. Direct effect table

	Original Sample	Sample Mean	Standard Deviasi	T Statistic	P Values	Conclusion
GHRM → EP	-0.0009	-0.009	0.064	0.142	0.887	Not proven
GHRM → OCB	0.927	0.926	0.014	66.756	0.000	Proven
OCB → EP	0.971	0.972	0.058	16.609	0.000	Proven

Source: Primary data (2024)

The F Square Test

Based on the F Square EP study results, it is clear that the effect of the GHRM model on OCB, that is, 6.109, and the OCB model on EP, that is, 1.827, is quite large (> 0.35). In the meantime, because GHRM is at 0.000, which is below 0.02 minimum value allowed by the F Square criteria—it had no apparent effect on EP [69].

Table 8. F square table

	Environmental Performance	Green Human Resource Management	Organizational Citizenship Behavior
Environmental Performance			
Green Human Resource Management	0.000		6.109

Organizational Citizenship Behavior	1.827		
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Source: Primary data (2024)

R Square Test

The EP and OCB models are strong, as proved by the R Square EP analysis results, which are ≥ 0.75 [70]. Based on the results of the R square test using SmartPLS 3 above, it shows that the dependent variables, namely environmental performance and organizational citizenship behavior, vary greatly and cannot be explained by the independent variables.

Table 9. R square table

	R Square
Environmental Performance	0.927
Organizational Citizenship Behavior	0.859

Source: Primary data (2024)

5 Conclusion and Recommendations

Conclusion

Based on the demographics of the questionnaire respondents used as primary research material or data, the majority of environmentally friendly manufacturing employees used as research objects are women, aged 17–27, and are undergraduate graduates. Green Human Resource Management (GHRM) does not significantly influence organizational citizenship behavior (OCB), but OCB has a significant positive influence on EP. This statement has been proven by several test results using SmartPLS 3, as previously explained. Therefore, hypothesis 1, GHRM positively influences OCB is not valid. However, hypothesis 2, OCB influences EP positively is valid, as is hypothesis 3, GHRM influences EP positively through OCB. So, the results of this study are different from research or theory, which states that GHRM positively influences OCB.

Recommendation

The author's recommendation is that readers read more research on the same topic to better understand it. Apart from that, it is hoped that other researchers will carry out more research on related topics because there is still very little research on the topic of GHRM influencing environmental performance, so that many readers will increasingly understand and apply the theory in their companies. Apart from that, the recommendation from the author is that other variables may be added to the variables used that are suitable to the topic in order to produce better new research.

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