GREEN HUMAN RESOURCE MANAGEMENT PRACTICES AND ORGANIZATIONAL PERFORMANCE OF SELECTED MANUFACTURING FIRMS IN PLATEAU STATE, NIGERIA.

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ABSTRACT

The persistent challenges of inefficiency, high operational costs, inconsistent output quality, and weak employee commitment continue to constrain the Nigerian manufacturing sector's contribution to GDP at approximately 8.8% (NBS, 2024), particularly in firms like NASCO and Grand Cereals in Jos, Plateau State. This study was undertaken to examine the impact of Green Human Resource Management (GHRM) practices on operational performance in selected Nigerian manufacturing firms, with a focus on how green recruitment and selection and green training and development, influence production efficiency and resource utilization. The study adopted a descriptive and survey research design. The population comprised of employees from NASCO and Grand Cereals, and a sample size of 202 was determined using Yamane's formula with a 5% margin of error and 20% attrition adjustment. A stratified random sampling technique was employed to ensure representation across HR managers, production supervisors, and operational staff. Primary data were collected using a structured questionnaire on a 5-point Likert scale and analyzed using descriptive statistics and multiple regression with the aid of SPSS Output version 26. The findings revealed that green recruitment and selection had a significant positive effect on production efficiency ($\beta=0.550$, $p<0.001$), green training and development showed a marginally significant negative relationship with resource utilization ($\beta=-0.151$, $p=0.050$). The study concluded that while green recruitment enhances operational efficiency, training and compensation practices require redesign to mitigate unintended negative outcomes in resource-constrained contexts. It recommended prioritizing environmental criteria in recruitment and integrating hands-on training with supportive infrastructure.

***Key words**: Green Human Resource Management, Green Recruitment and Selection, Green Training and Development, Resource Utilization, Production Efficiency*

INTRODUCTION

Organizations across the world have faced growing pressure to balance profitability with environmental and social responsibility. This shift has given rise to green human resource management (GHRM) as a strategic approach to align human capital practices with environmental sustainability goals. Globally, manufacturing industries are under scrutiny not only for their carbon footprint but also for how they leverage their workforce to drive greener production processes and sustainable growth. Evidence shows that organizations that successfully integrate green recruitment, training, performance appraisal, and reward systems tend to achieve improvements in organizational performance through enhanced employee engagement, reduced absenteeism,

and improved operational efficiency (Aboramadan & Karatepe, 2021).

Organizational performance is increasingly evaluated beyond traditional financial indicators. It encompasses dimensions such as operational effectiveness, compliance with environmental regulations, employee well-being, and corporate reputation. The global manufacturing sector has found that integrating GHRM can lead to a reduction in production waste by up to 15% and an increase in process reliability by nearly 20%, as evidenced by European and Asian firms that have adopted sustainability-driven HR strategies (Kinkel et al., 2022). These practices foster stronger employee engagement and commitment, which, in turn, translate into reduced absenteeism, enhanced productivity, and improved operational outcomes.

Across Africa, the adoption of GHRM is gradually increasing, particularly in response to industrial expansion and environmental concerns. Countries like Egypt, Kenya, and South Africa have witnessed a rise in green HR policies, including eco-focused training and workplace redesign, which have been linked to up to 12% improvement in energy efficiency and higher employee satisfaction (Aboulfotouh et al., 2022). However, progress remains uneven due to weak institutional enforcement, limited technological capacity, and inadequate awareness among key stakeholders.

In Nigeria, the manufacturing sector responsible for approximately 8.8% of GDP in 2023 continues to face persistent challenges such as high operational costs, weak environmental compliance, low workforce engagement, and suboptimal productivity (Adubor et al., 2022; Diri & Elisha, 2021). While some firms have begun adopting GHRM practices, including green recruitment to attract environmentally conscious employees and green training initiatives to promote waste reduction and energy conservation, the overall implementation level remains modest. Evidence suggests that such initiatives can lower absenteeism rates by up to 10% and reduce turnover costs when linked with green reward systems.

This study focuses on two key green human resource management (GHRM) practices green recruitment and selection, green training and development, and green compensation and reward as the independent variables, and examines their impact on operational performance as the dependent variable in the Nigerian manufacturing sector. Green recruitment and selection involve attracting and hiring employees who possess environmentally conscious values and the skills necessary to support sustainable organizational goals. Green training and development aim to enhance employees' knowledge and capabilities in implementing eco-friendly practices, such as energy conservation, waste minimization, and efficient resource utilization. Operational performance, as the dependent variable, reflects the efficiency and effectiveness of manufacturing processes and is measured through indicators such as production efficency, resource utilization and improved product quality.

Organizational performance in Nigeria's manufacturing sector has long been a subject of concern due to recurring challenges such as inefficiency, high energy costs, inconsistent output quality, and weak employee commitment. While many firms focus on traditional performance improvement measures such as cost-cutting and mechanization, these efforts often neglect the human factor and its role in driving sustainable outcomes. Manufacturing firms operate like finely tuned symphonies machines hum steadily, production targets are met with ease, materials flow just-in-time, energy use is minimized, and waste is nearly non-existent. Every shift ends with high-quality products delivered on time, while environmental impact is low, thanks to disciplined resource use and well-trained, motivated employees.

However, present-day realities in Nigeria's manufacturing sector tell a different story. According to the National Bureau of Statistics, manufacturing contributes only about 8.8% of the nation's GDP, far below the potential seen in more diversified economies. Many factories operate at under 60% capacity utilization, frequently suffer equipment breakdowns, and report defect rates that undercut both revenue and morale. Energy inefficiencies abound the country pays some of the highest industrial electricity tariffs in the region while wasteful processes and poor environmental compliance escalate operational costs and jeopardize

business continuity. Few firms prioritize green recruitment, meaning employees are seldom screened for environmental awareness or eco-friendly values. Green training and development, which could teach the workforce to minimize waste, conserve energy, or maintain equipment more sustainably, are rare and often poorly executed. And green compensation and reward systems where employees gain recognition or tangible benefits for sustainability-focused behaviors are virtually unheard of.

The absence of these green HR practices leaves a workforce less engaged, less empowered, and less likely to act in ways that improve operational performance. The result Production lines falter under unexpected downtime, labor hours don't translate into proportional output, defect and rework volumes climb, and energy or material use per unit produced remains stubbornly high. All these symptoms point back to a single, pressing problem: the operational performance of Nigerian manufacturing firms remains suboptimal and it's being held back, in part, by the lack of purpose-driven, environmentally aligned HR strategies.

Aboramadan and Karatepe (2021) show how green recruitment when combined with perceived organizational support enhances employee behavioral outcomes, including discretionary efforts that smooth daily operations. Darban, Karatepe et al (2022) illustrate how green training fosters work engagement, which mediates reductions in absenteeism and promotes "green recovery performance," aligning workforce behavior with productivity and environmental goals. In Nigeria, Adubor et al. (2022) document that while some firms are beginning to adopt green HR practices, the implementation remains uneven; Diri and Elisha (2021) argue that GHRM can be a vital catalyst for environmental sustainability, yet operational metrics remain untracked and undervalued in decision-making. Thus, the present study seeks to examine the impact of green human resource practices on the organizational performance of selected manufacturing firms in Nigeria, with the ultimate goal of identifying how sustainable HR strategies can enhance productivity, reduce waste, and foster a culture of continuous improvement. The study seeks to address the following research questions:

1. How does green recruitment and selection affect production efficiency of manufacturing firms in Plateau State, Nigeria

2. To what extent does green training and development influence resource utilization of manufacturing firms in Plateau State, Nigeria?

Research Hypotheses

H_{01}: Green recruitment and selection have no significant effect on production efficiency of manufacturing firms in Plateau State, Nigeria.

H_{02}: Green training and development have no significant effect on resource utilization of manufacturing firms in Plateau State, Nigeria

LITERATURE REVIEW

Green Human Resource Practices

Green Human Resource Management (GHRM) is a strategic approach that integrates environmental sustainability principles into the core functions of human resource management to foster eco-friendly behaviors and achieve organizational sustainability objectives. It represents a paradigm shift from traditional HR practices by embedding environmental consciousness into processes such as recruitment, training, performance management, compensation, and employee engagement. GHRM seeks to align the workforce with an organization's environmental goals, creating a culture that prioritizes sustainable practices while enhancing organizational effectiveness. The essence of GHRM is holistic integration of environmental consciousness throughout the employee lifecycle, from onboarding to exit. For instance, organizations may design job roles with explicit environmental responsibilities, such as monitoring resource usage or leading green initiatives, thereby embedding sustainability into daily operations (Renwick et al., 2013).

Green Recruitment and Selection

Green recruitment and selection is a strategic design of hiring processes that prioritize candidates who demonstrate environmental

awareness, values, and skills aligned with an organization's sustainability objectives. This approach integrates eco-friendly criteria into every stage of the recruitment process, from job advertisements and candidate screening to interviews and final selection, ensuring that new hires are committed to environmental stewardship and capable of contributing to sustainability initiatives (Renwick et al, 2013). The process of green recruitment and selection involves several key practices. Job advertisements are crafted to highlight the organization's commitment to sustainability, explicitly mentioning environmental responsibilities or green initiatives as part of the role. For example, job descriptions may include tasks such as reducing energy consumption, implementing waste reduction strategies, or participating in sustainability programs (Arulrajah et al., 2015). Screening processes incorporate assessment tools, such as questionnaires or situational judgment tests, to evaluate candidates' environmental knowledge, attitudes, and past involvement in eco-friendly activities. Interview questions may explore candidates' values and their ability to innovate in sustainable practices, ensuring alignment with the organization's green objectives.

Green Training and Development

Green training and development refer to structured programs designed to equip employees with the knowledge, skills, and attitudes necessary to implement environmentally sustainable practices within their roles. These initiatives focus on fostering environmental awareness and promoting behaviors that align with an organization's sustainability objectives, such as energy conservation, waste reduction, recycling, and the adoption of eco-efficient processes (Jabbour, 2011). Unlike traditional training, which primarily targets job-specific skills, green training integrates environmental education into professional development, ensuring employees understand the importance of sustainability and are empowered to contribute to ecological goals while enhancing their job performance. Effective green training programs are interactive, continuous, and context-specific, utilizing methods such as hands-on simulations, case studies, e-learning modules, and on-the-job training to ensure employees can practically apply sustainable practices in their daily tasks (Arulrajah et al., 2015).

Organizational Performance

Organizational performance reflects an organization's capacity to balance internal processes such as operational workflows and workforce management with external stakeholder expectations, including those of customers, regulators, and society at large. This balance is critical for ensuring long-term viability, competitive advantage, and resilience in dynamic and competitive environments. Historically, organizational performance was primarily assessed through financial indicators, such as profit margins and market share. However, evolving global priorities, including heightened awareness of environmental and social responsibilities, have expanded the scope of performance evaluation to include sustainability and stakeholder-focused metrics. Kaplan and Norton (1992) introduced the Balanced Scorecard, a seminal framework that integrates four perspectives financial, customer, internal process, and learning and growth to provide a holistic approach to performance measurement.

Operational Performance

Operational performance refers to the efficiency and effectiveness with which an organization executes its core processes, including the production of goods or services, resource management, and quality assurance. It is a critical component of organizational success, as it directly influences profitability, customer satisfaction, and competitive positioning in the marketplace (Adubor et al, 2022). Operational performance is measured through a variety of indicators, such as throughput (the rate of production or service delivery), cost efficiency, waste reduction, service or delivery timelines, and process reliability (Richard et al 2009; Abubakar & Daniel, 2016). These metrics collectively reflect an organization's ability to optimize its resources human, financial, and material while delivering value to stakeholders and maintaining alignment with strategic objectives.

The concept of operational performance extends beyond traditional efficiency metrics to encompass sustainability and stakeholder-focused outcomes. As organizations face increasing pressure to balance economic goals with environmental and social responsibilities, operational performance now includes measures of environmental impact, such as energy consumption, carbon emissions, and waste generation (Elkington, 1997). High operational performance enables organizations to streamline processes, reduce costs, and enhance service or product quality, thereby strengthening their competitive advantage and market reputation. For instance, efficient resource management can lead to significant cost savings, while timely delivery and high-quality outputs foster customer loyalty and trust.

Production Efficiency

Production efficiency is a critical measure of an organization's ability to maximize output while minimizing the use of inputs, such as labor, materials, energy, and other resources. It reflects the effectiveness and optimization of processes involved in delivering goods or services, serving as a cornerstone of operational performance (Adubor et al., 2022). High production efficiency is essential for reducing operational costs, enhancing resource utilization, and strengthening organizational competitiveness in dynamic markets. The concept of production efficiency goes beyond simply increasing output; it involves optimizing the entire value chain to ensure resources are used judiciously while maintaining or improving quality. Key indicators of production efficiency include throughput (the rate of production), input-output ratios, waste reduction, energy consumption per unit of output, and process cycle times (Richard et al., 2009).

Resource Utilization

Resource utilization is strategic and sustainable management of an organization's resources encompassing materials, energy, human capital, and other inputs to achieve operational goals with maximum efficiency and minimal waste. It is a critical aspect of operational performance, emphasizing the optimization of resource use to enhance productivity, reduce costs, and minimize environmental impact (Jabbour, 2011). Effective resource utilization enables organizations to balance economic performance with environmental responsibility, aligning with the principles of sustainability and the triple bottom line (people, planet, profit) (Elkington, 1997). The concept of resource utilization involves both the efficient allocation of resources and the adoption of practices that reduce waste and environmental harm. Key indicators of effective resource utilization include reduced energy consumption per unit of output, minimized material waste, optimized labor productivity, and lower carbon emissions (Richard et al. 2009).

Theoretical Framework

Resource-Based View (RBV) Theory

The Resource-Based View (RBV) Theory, originally proposed by Barney (1991), posits that organizations achieve sustained competitive advantage by leveraging unique, valuable, rare, inimitable, and non-substitutable resources. Human capital is considered a primary strategic resource under RBV, as it encompasses the knowledge, skills, and capabilities of employees that can be developed to create organizational value. In the context of GHRM, RBV Theory views green HR practices as mechanisms for cultivating distinctive human resource competencies that integrate environmental sustainability into organizational processes, thereby enhancing efficiency, innovation, and long-term resilience (Jabbour & Santos, 2008).

GHRM practices, such as green recruitment, training, and compensation, align with RBV by building a workforce with specialized sustainability skills. Green recruitment attracts environmentally conscious talent, creating a rare pool of employees predisposed to sustainable behaviors. Green training develops inimitable skills in eco-efficient practices, such as waste reduction and energy conservation, while green compensation reinforces these capabilities by rewarding contributions to environmental goals. These practices transform human resources into a source of competitive advantage, enabling organizations to optimize resource utilization, improve product quality,

and achieve superior paerformance (Tang et al., 2018).

Empirical Review

Diri and Elisha (2021) explored "Green Human Resource Management: A Catalyst for Environmental Sustainability in Nigeria," with the objective of examining how Green Human Resource Management practices promote environmental sustainability and operational efficiency in Nigerian manufacturing firms. The study utilized a mixed-methods approach, combining surveys of 150 employees and interviews with HR managers, analyzed through correlation and thematic analysis. Results showed a significant positive relationship ($r = 0.72$, $p < 0.01$) between green recruitment, training, and operational performance, with a 20% reduction in operational costs attributed to reduced energy consumption and waste. Green training was particularly effective in fostering employee awareness of sustainable practices. The researchers recommended that Nigerian manufacturing organizations invest in continuous green training and develop clear sustainability policies to enhance resource utilization and compliance with environmental regulations.

Aboramadan and Karatepe (2021) investigated "Green Human Resource Management, Perceived Green Organizational Support and Their Effects on Hotel Employees' Behavioral Outcomes," aiming to assess how Green Human Resource Management practices influence employee behaviors and resource utilization in the hospitality sector, with implications for other industrieslike manufacturing. The study adopted a quantitative survey of 250 hotel employees in Jordan, using structural equation modeling to analyze relationships. Findings indicated that green recruitment significantly improved resource utilization efficiency by 15% ($\beta = 0.58$, $p < 0.01$), as employees hired for their environmental awareness were more likely to adopt waste reduction and recycling practices. Green training further enhanced employee engagement in sustainable behaviors. The authors recommended that organizations implement Green Human Resource Management practices to attract environmentally conscious talent and provide ongoing training to optimize resource use, suggesting that these findings could be applied to manufacturing contexts like Nigeria's.

Darban et al (2022) investigated "Does Work Engagement Mediate the Impact of Green Human Resource Management on Absenteeism and Green Recovery Performance?" with the objective of examining how Green Human Resource Management practices influence employee engagement and product quality. The study used a quantitative survey of 280 employees in the hospitality sector, analyzed through structural equation modeling. Results showed that green compensation systems improved product quality by 14% by motivating employees to focus on detail-oriented, eco-friendly production processes ($\beta = 0.59$, $p < 0.01$), reducing defects and enhancing reliability. Green training also fostered accountability, improving quality outcomes. The researchers recommended that organizations implement Green Human Resource Management practices to enhance employee engagement and product quality, noting that these findings could inform manufacturing sectors like Nigeria's.

METHODOLOGY

The study adopted a descriptive and survey research design, which is suitable for examining the relationships between Green Human Resource Management practices and organizational outcomes in a specific context (Saunders et al., 2019). The descriptive and survey approach is appropriate for capturing employee perceptions and organizational practices at NASCO and Grand Cereals in Jos, allowing for statistical analysis to test the research hypotheses. The cross-sectional nature of the study ensures data collection at a single point in time, providing a snapshot of GHRM practices and their effects within the selected firms.

The target population for this study comprised employees of NASCO and Grand Cereals, two prominent manufacturing firms in Jos, Plateau State, Nigeria. The population includes HR managers, production supervisors, and operational staff involved in production and

resource management processes, as these groups are directly engaged in implementing or experiencing GHRM practices. Based on company records and reliable estimates, NASCO's Jos plant has approximately 424 employees, and Grand Cereals has 413 employees, resulting in a total population of 837 employees across both firms (NASCO Group, 2024; Grand Cereals Limited, 2024). The sample size was determined using Yamane's formula, which is suitable for calculating an appropriate sample size for a finite population (Yamane, 1967). The Yamane (1967) formula was used to determine the sample size for this study:

$$n = \frac{N}{1 + N(e)^2}$$

n = the sample size

N = the Population of the Study (837)

e = the margin error in the calculation

$$n = \frac{837}{1+837(0.05)^2}$$

n = 168

Thus, the adjusted sample size for this study, after accounting for a 20% attrition rate, was 202 respondents. The study utilized primary data collected through structured questionnaire administered to employees at NASCO and Grand Cereals. The questionnaire is designed to collect quantitative data on the independent variables (green recruitment, training, and compensation) and dependent variables (operational performance, resource utilization, production efficiency, and product quality). The variables are measured using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) to capture employee perceptions. The questionnaire was administered physically to employees at NASCO and Grand Cereals in Jos, with the assistance of HR departments to ensure access and cooperation.

The collected data was analyzed using both descriptive and inferential statistical techniques. Descriptive statistics, including means, standard deviations, and frequencies, was used to summarize demographic data and employee perceptions of Green Human Resource Management practices and organizational outcomes. Inferential statistics, specifically multiple regression analysis, was employed to test the research hypotheses, examining the relationships between the independent variables (green recruitment and training) and dependent variables (operational performance, resource utilization, and production efficiency).

The formula of the Regression Analysis is given as:

$$Y = a + bx_f + \varepsilon$$

Decision Rule

The hypotheses were tested at a 5% significance level (α = 0.05):

- If p-value < 0.05: Reject the null hypothesis (H_0), indicating a significant relationship
- If p-value ≥ 0.05: Accept the null hypothesis (H_0), indicating no significant relationship

RESULTS AND DISCUSSIONS

Table 1: Model Summary for Test of hypothesis one

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.490[a]	.240	.236	1.003

a. Predictors: (Constant), GRS

Source: SPSS Output version 26

The model summary for hypothesis one shows an R value of 0.490 and R^2 of 0.240, indicating that green recruitment and selection (GRS1) explains 24.0% of the variance in production

efficiency (PE1). The adjusted R^2 of 0.236 confirms that this explanatory power remains substantial even after adjusting for the number of predictors, and the standard error of estimate (1.003) indicates reasonable prediction accuracy. This moderate R^2 value suggests that while green recruitment and selection is a significant predictor of production efficiency, other factors not included in this simple regression model also influence efficiency outcomes.

Table 2: ANOVA for test of hypothesis one

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	58.816	1	58.816	58.467	.000[b]
	Residual	186.104	185	1.006		
	Total	244.920	186			

a. Dependent Variable: PE

b. Predictors: (Constant), GRS

Source: SPSS Output version 26

The ANOVA table demonstrates that the regression model for hypothesis one is statistically significant ($F=58.467$, $p<0.001$), indicating that green recruitment and selection significantly predicts production efficiency. The regression sum of squares (58.816) relative to the residual sum of squares (186.104) shows that while a substantial portion of variance is explained by the model, considerable unexplained variance remains. The highly significant F-statistic ($p=0.000$) provides strong evidence to reject the null hypothesis and confirms that the relationship between green recruitment and production efficiency is not due to chance

.

Table 3: Regression result for test of hypothesis one

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.560	.252		6.196	.000
	GRS1	.550	.072	.490	7.646	.000

a. Dependent Variable: PE

Source: SPSS Output version 26

The regression coefficients show that green recruitment and selection (GRS1) has a significant positive effect on production efficiency ($\beta=0.550$, $t=7.646$, $p<0.001$), with a standardized coefficient (Beta) of 0.490. The constant term of 1.560 represents the baseline production efficiency score when green recruitment is absent. The positive beta coefficient indicates that for every one-unit increase in green recruitment practices, production efficiency increases by 0.550 units, representing a moderate to strong effect size. The highly significant t-value confirms the stability of this relationship

.

Test of hypothesis two

Table 4: Model Summary for Test of hypothesis two

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.144[a]	.021	.015	1.078

a. Predictors: (Constant), GTD

Source: SPSS Output version 26

The model summary for hypothesis two reveals an R value of 0.144 and R^2 of 0.021, indicating that green training and development (GTD) explains only 2.1% of the variance in resource utilization (RU), representing a weak relationship. The adjusted R^2 of 0.015 confirms minimal explanatory power, and the standard error of estimate (1.078) is relatively high compared to the model's predictive capability. This weak R^2 value suggests that the specific training variable (GTD: "Employees receive regular workshops on eco-efficient production processes") captured in this analysis has limited direct impact on resource utilization as measured by RU ("GHRM initiatives have optimized the use of energy and raw materials").

Table 5: ANOVA for test of hypothesis two

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.544	1	4.544	3.908	.050[b]
	Residual	215.103	185	1.163		
	Total	219.647	186			

a. Dependent Variable: RU

b. Predictors: (Constant), GTD

Source: SPSS Output version 26

The ANOVA table shows that the regression model for hypothesis two is marginally significant (F=3.908, p=0.050), just meeting the conventional significance threshold. The regression sum of squares (4.544) is substantially smaller than the residual sum of squares (215.103), indicating that most variance in resource utilization remains unexplained by green training. The borderline significance (p=0.050 exactly) suggests that while a relationship exists, it is weak and unstable, potentially influenced by sample-specific factors. This marginal significance warrants caution in interpreting results and suggests that the null hypothesis (H_{02}) cannot be confidently rejected.

Table 6: Regression result for test of hypothesis two

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3.796	.294		12.903	.000
	GTD2	-.151	.076	-.144	-1.977	.050

a. Dependent Variable: RU

Source: SPSS Output version 26

The regression coefficients reveal a negative relationship between green training (GTD2) and resource utilization (RU2) (β=-0.151, t=-1.977, p=0.050), with a standardized coefficient (Beta) of -0.144. This counterintuitive negative coefficient suggests that increased frequency of workshops is associated with slightly lower perceived optimization of energy and raw materials. The constant term of 3.796 is relatively high, indicating that resource utilization perceptions are moderate even without training workshops. The negative relationship may reflect that employees receiving more training become more aware of resource inefficiencies (heightened consciousness effect) or that workshops reveal gaps rather than immediately solving problems. The marginal significance (p=0.050 exactly) and weak effect size indicate that while the relationship is statistically detectable, it lacks practical significance, leading to acceptance of the null hypothesis (H_{02}) that green training has no significant positive effect on resource utilization as currently measured.

Discussion of Findings

The study investigated the impact of Green Human Resource Management (GHRM) practices on operational performance in selected Nigerian manufacturing firms (NASCO and Grand Cereal), yielding two key findings:

First, green recruitment and selection demonstrated a significant positive effect on production efficiency (β=0.550, p<0.001), explaining 24% of variance (R^2=0.240). This finding confirms that hiring employees with environmental awareness and eco-friendly values enhances production optimization, throughput, and resource minimization.

Second, green training and development showed a marginally significant negative relationship with resource utilization (β=-0.151, p=0.050), explaining only 2.1% of variance (R^2=0.021).

5.0 Conclusion and Policy Implication

Green recruitment emerged as a strategic lever for production efficiency (β=0.550, p<0.001; R^2=0.240) in Nigeria's constrained manufacturing landscape, validating RBV by leveraging sustainability-aligned human capital for optimization despite infrastructural gaps.

The negative training-utilization link (β=-0.151, p=0.050; R^2=0.021) highlights contingencies: awareness may precede improvements, but weak infrastructure limits translation, per Social Cognitive Theory, necessitating integrated support for efficacy.

Policy Implications

1. Manufacturing firms in Nigeria, particularly in Plateau State, should prioritize environmental awareness, values, and competencies as key criteria in recruitment and selection processes. Job advertisements, screening tools, and interview questions should explicitly incorporate sustainability requirements. This low-cost yet high-impact practice can significantly improve production efficiency, as evidenced by the strong positive relationship found in this study. Policymakers and industry regulators should provide incentives, such as tax relief or green certification, to encourage widespread adoption of green recruitment in the manufacturing sector.
2. Given the marginally significant negative relationship between green training and resource utilization, firms must move beyond generic workshops to more effective, practical, and integrated training approaches. Training programs should be hands-on, supported by necessary infrastructure (such as energy monitoring tools and waste management systems), and directly linked to measurable improvements in resource use. Management should ensure that green training is accompanied by adequate resources and follow-up mechanisms to convert increased awareness into actual efficiency gains. Government agencies and the Manufacturers Association of Nigeria (MAN) should support firms through subsidized, context-specific green skills development initiatives tailored to local manufacturing challenges.

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