GREEN HUMAN RESOURCE MANAGEMENT PRACTICES AND SUSTAINABILITY OF MANUFACTURING FIRMS

OKON, EMMANUEL EKPENYONG*
Department of Business Management, University of Calabar, Calabar
Email: okonemmanuel2018@gmail.com; +2348032738173(Corresponding author)

EMU, WINIFRED HARRY
Department of Educational Management, University of Calabar, Calabar
Email: okonwinifred12@gmail.com; +2348034912708

MORGAN, MORGAN OBONG
Department of Business Management, University of Calabar, Calabar
Email: m_morgan24@yahoo.com; +2348037707621

EDODI, HOPE UKAM
Department of Business Management, University of Calabar, Calabar
Email: hopeedodi@gmail.com; +2348069059787

ABSTRACT
As organizations confront increasing environmental pressures, the integration of sustainability into human resource management has emerged as a critical strategic priority. This study investigates the impact of green human resource management (GHRM) practices, specifically green recruitment and selection, green training and development, and green job analysis on the sustainability of manufacturing firms. Guided by the resource-based view theory, the research adopts a survey design and gathers data from 188 employees of Bao Yan Huan Jian Iron & Steel Group in Calabar, Nigeria. Simple linear regression was employed to test the hypothesized relationships. Findings reveal that all three GHRM practices significantly contribute to the sustainability of manufacturing firms. Green recruitment and selection facilitate the hiring of environmentally conscious talent, green training enhances employees' capabilities to support sustainability goals, and green job analysis aligns job roles with environmental responsibilities. The study concludes that embedding environmental values into HRM systems strengthens organizational resilience and ecological performance. It recommends that firms institutionalize these practices as part of their core sustainability strategies.
Keywords: Sustainability, green human resource practices, green recruitment, green training and development. green job analysis
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1. INTRODUCTION

Environmental sustainability has become an urgent global priority, compelling both policymakers and businesses to reassess their operational approaches and reduce the environmental impact of their activities. Organizations today are under increasing pressure to align their practices with sustainability goals, prompting the adoption of environmentally friendly strategies aimed at not only preserving ecological systems but also enhancing organizational resilience and societal wellbeing (Mousa & Othman, 2020). In this context, Green Human Resource Management (GHRM) has emerged as a strategic approach that integrates environmental management into human resource functions (Saleem et al., 2021).

Green Human Resource Management is the alignment of HRM policies and practices with environmental objectives to develop a workforce that actively contributes to ecological sustainability (Amarachi et al., 2025; Huo et al., 2022). It includes green recruitment and selection, green training and development, and green job analysis each designed to embed environmental considerations into the employee lifecycle. For instance, green recruitment seeks candidates with eco-conscious values and competencies (Ullah, 2017), while green training equips staff with the skills and awareness needed to support the organization's environmental agenda (Yusoff et al., 2020). Green job analysis further ensures that roles are structured to include environmental responsibilities, guiding employee behavior toward sustainable outcomes (Arulrajah et al., 2015).

Organizational sustainability which is the capacity to maintain economic, social, and environmental viability over time requires firms to treat environmental responsibility not as an add-on but as a core strategic objective (Landrum & Edwards, 2009). In manufacturing industries, which often face heightened scrutiny due to their environmental footprint, adopting GHRM is not just a proactive measure but a necessity for long-term survival and regulatory compliance (Zaid et al., 2018).

Despite growing global interest, the implementation of GHRM practices is fraught with challenges, especially in developing economies. Firms often struggle with a lack of awareness, insufficient commitment, inadequate resources, and limited institutional support, which hinder the adoption of green HR initiatives (Dubois & Dubois, 2012). Furthermore, the transition to sustainable practices is made more difficult by organizational inertia and a disconnect between corporate strategy and environmental policy execution.

In Nigeria, and specifically within the context of manufacturing firms like Bao Yan Huan Jian Iron & Steel Group in Calabar, research examining the relationship between GHRM practices and organizational sustainability remains sparse. Although some studies have acknowledged the theoretical significance of green HR practices (Mousa & Othman, 2020; Huo et al., 2022), empirical data from local firms, especially in high-impact sectors, is limited. This absence of context-specific evidence presents a knowledge gap regarding how GHRM practices such as green recruitment, training, and job analysis directly affect sustainability outcomes in Nigerian industrial settings. This study seeks to fill that gap by providing empirical insight into how GHRM practices influence the sustainability of manufacturing firms.

2. LITERATURE REVIEW

Green Human Resource Management (GHRM) refers to the integration of environmental sustainability into the policies, practices, and systems that shape employee behavior and performance in organizations. It represents a strategic shift in HRM, where ecological objectives are embedded into core HR functions such as recruitment, training, performance appraisal, and compensation. GHRM has gained traction as businesses increasingly acknowledge the necessity of aligning operational practices with global sustainability demands (Tang et al., 2018).

According to Labella-Fernandez and Martinez-del-Rio (2019), GHRM can be understood as a framework of people-centered practices that foster employee competencies, motivation, and engagement toward achieving both economic and environmental sustainability. These practices include green recruitment and selection, green training and development, environmental performance appraisal, eco-incentivized reward systems, employee involvement in green initiatives, and environmentally-conscious teamwork and communication (Eche et al., 2025).

The foundation of GHRM lies in transforming employees into agents of environmental change within the organization. This transformation is operationalized by systematically aligning HR practices with environmental objectives. Huo et al. (2022) argue that GHRM not only supports

environmental sustainability but also contributes to improved organizational performance by embedding green behavior into everyday tasks. Through hiring environmentally aware individuals, offering green training, incentivizing eco-friendly actions, and encouraging participation in green programs, firms can foster a proactive environmental culture.

Empirical studies further validate the performance implications of GHRM. For instance, Mousa and Othman (2020) found that green HRM practices significantly enhance employee behavior and performance in environmentally sensitive sectors. Likewise, Jabbour and De Sousa (2016) demonstrated a direct relationship between GHRM practices and environmental performance in manufacturing industries. These studies highlight GHRM as a functional mechanism through which environmental performance can be embedded at the individual and organizational levels. GHRM also plays a critical role in reducing organizational carbon footprints and fostering a culture of resource efficiency. It promotes responsible consumption, waste minimization, and the adoption of sustainable work habits (Mashala, 2018). In this context, Mehta and Chugan (2015) describe GHRM as a strategic application of human resource practices to achieve eco-efficiency and green organizational objectives.

In organizational settings, this integration of environmental principles into HR practices becomes a dynamic tool for shaping workforce behavior in ways that directly support environmental goals. Deshwal (2015) stresses the importance of applying HRM policies to ensure the efficient use of resources and reduction of environmental impact. Similarly, Haddock-Millar et al. (2016) note that the success of GHRM lies in its systematic and deliberate alignment with the broader sustainability agenda of the organization.

The relationship between HRM and environmental goals is not merely procedural but also cultural. Paille et al. (2014) argue that selecting, training, and rewarding employees based on their eco-conscious attitudes and behaviors fosters an internal culture that values sustainability. This cultural shift encourages employees to see environmental stewardship as a core part of their role, ultimately influencing organizational sustainability outcomes.

Empirical evidence also supports the idea that GHRM can lead to tangible sustainability benefits. Huo et al. (2022) observed that SMEs incorporating GHRM practices achieved significant improvements in green performance. Similarly, Mwita and Kinemo (2018) documented that firms that adopted green recruitment and selection practices were more likely to attract qualified candidates who align with environmental values, contributing to better organizational sustainability metrics. Therefore, green human resource management practices provide a strategic pathway for organizations to operationalize their environmental commitments.

2.1   Green recruitment and selection and sustainability

Green recruitment and selection practices are the integration of environmental priorities into hiring processes. These practices serve as the gateway to building a workforce aligned with the organization's sustainability objectives. According to Ullah (2017), this involves identifying and attracting candidates whose values, skills, and behaviors support environmental management systems. Unlike conventional hiring, green recruitment emphasizes long-term environmental fit and organizational alignment, ensuring that the candidates chosen can contribute directly to ecological objectives.

Research has shown that green recruitment enhances organizational performance through the attraction of environmentally conscious and competent talent (Mustapha, Ilesanmi & Aremu, 2013). This supports the notion that hiring the right personnel underpins the effectiveness of all other HR functions (Tomcikova, 2016). Moreover, Zaid & Jaaron (2020) highlight that recruiting environmentally aware employees poses a challenge due to the competitive demand for such talent, necessitating innovative approaches and long-term strategic alignment.

Mashala (2018) emphasizes the importance of embedding green criteria within job descriptions, outlining duties such as energy conservation and waste reduction. These specifications serve as filters during selection and signal the organization's environmental priorities. Once hired, new employees are inducted through sustainability-oriented programs, enhancing their understanding of the firm's green goals and strengthening their commitment to eco-responsible behavior (Ahmad, 2015). Green recruitment and selection are critical in laying the foundation for sustainable HR practices. They shape organizational culture by bringing in employees who internalize green values and champion environmental initiatives, ultimately enhancing the organization's capacity to achieve sustainability goals (Mousa & Othman, 2020).

H_01: Green recruitment and selection practice influence sustainability of manufacturing firm

2.2 Green training and development and organizational sustainability

Training and development initiatives are essential for embedding sustainability into organizational culture. Green training equips employees with the knowledge and skills necessary to adopt environmentally responsible practices and to understand the impact of their work on the environment (Teixeira et al., 2016). Yusoff et al. (2020) describe this as a deliberate process of aligning employee competencies with the environmental objectives of the organization, turning training into a strategic tool for change. Effective green training focuses on topics such as energy efficiency, waste management, and environmental health and safety. These sessions often take the form of workshops, seminars, and induction programs, especially for new employees. According to Fapohunda, Genty, and Olanipekun (2021), such training not only fosters environmental awareness but also builds employee engagement with the organization's sustainability agenda.

Ullah (2017) notes that green training in Nigeria holds the potential to address gaps in environmental consciousness among the workforce, making it a catalyst for change. When consistently implemented, training initiatives reduce environmental degradation, promote efficient resource utilization, and prepare employees to tackle ecological challenges with innovation (Kane, 2011).

Furthermore, training is not only about transferring knowledge but about shaping attitudes. Schaltegger et al. (2020) argue that training focused on mindset and behavior change is more impactful in driving sustainable performance. Amankwah-Amoah (2018) supports this view, suggesting that holistic development in green competencies such as eco-innovation and critical problem-solving enables employees to take ownership of environmental outcomes. Through continuous learning and development, organizations foster a culture of environmental responsibility that extends beyond compliance to proactive ecological stewardship, making training and development indispensable to sustainability.

H_02: Green training and development practice influence sustainability of manufacturing firm

2.3 Green job analysis and organizational sustainability

Green job analysis integrates environmental elements into job design and specification. This process involves defining the duties, skills, and responsibilities of a job with a focus on minimizing environmental impact. As noted by Aswathapa (2012), job analysis is foundational to many HR functions, and when aligned with sustainability goals, it ensures that environmental accountability is embedded in organizational roles.

Job descriptions that include environmental tasks such as energy monitoring, recycling, or sustainability reporting provide clarity on green expectations. Arulrajah, Opatha, and

Nawaratne (2015) found that firms incorporating environmental duties into job specifications create greater accountability among employees. Such clarity encourages green behavior as employees recognize that environmental performance is a formal component of their role.

Green job analysis serves as a bridge between environmental policy and employee performance. According to Mwita and Kinemo (2018), it guides the selection and development of individuals capable of operating in eco-conscious ways. When organizations outline sustainability expectations from the outset, they are more likely to hire and retain staff with the requisite competencies and attitudes.

Malik et al. (2020) emphasize that green job analysis also supports workforce planning by helping HR identify skill gaps in environmental knowledge. This ensures that training efforts are appropriately targeted and that job roles evolve in step with environmental priorities. Ultimately, green job analysis aligns organizational structures with environmental goals, ensuring that sustainability is operationalized through every role and responsibility. This alignment not only supports environmental performance but enhances the efficiency, transparency, and accountability of human resource practices.

H₀3:   *Green job analysis practice influence sustainability of manufacturing firms*

2.4   Organizational sustainability

Organizational sustainability is a firm's capacity to operate in a way that balances economic viability with social equity and environmental integrity (Landrum & Edwards, 2009; Biala et al., 2025). It is increasingly recognized as a critical performance indicator, particularly in resource-intensive sectors like manufacturing. Unlike green businesses that focus primarily on environmental initiatives, sustainable organizations integrate ecological, social, and economic factors into all areas of decision-making. Green Human Resource Management plays a foundational role in achieving organizational sustainability. According to Tamunomiebi and Mezeh (2022), GHRM practices serve as both a catalyst and conduit through which sustainability objectives are executed at the employee level. These practices influence individual behavior, which in turn shapes organizational outcomes.

Roberts and Tribe (2018) describe sustainability as a behavioral outcome fostered through structured, value-driven actions across organizational levels. Green HRM functions such as hiring eco-aware staff, embedding sustainability into job roles, and incentivizing environmentally responsible behavior create conditions where sustainability becomes a shared priority. Kernel (2015) emphasizes that organizational sustainability must be justified through deliberate policies and systems that reflect care for people, development, and the planet. These policies must also anticipate future needs, ensuring that today's practices do not compromise tomorrow's viability. While the triple bottom line (economic, social, environmental) remains the standard framework, its implementation requires more than policy, it demands a cultural shift. Green HRM enables this transition, acting as the internal driver of sustainability through talent management, leadership development, and employee engagement. As organizations face mounting pressure from stakeholders and regulatory bodies, sustainability is no longer optional. GHRM offers a strategic path forward, where employee behaviour, institutional systems, and environmental outcomes are aligned to create resilient and responsible organizations (Oburota & Obafemi, 2023).

EMPIRICAL REVIEWS
Empirical evidence supports the growing relevance of Green Human Resource Management (GHRM) as a driver of corporate sustainability across diverse organizational contexts. Pasha and Akram (2024) examined firms in Pakistan and found that GHRM practices including green hiring, training, and job structuring directly enhance environmental and economic

sustainability when aligned with strategic corporate goals. Their study emphasizes the role of leadership commitment in embedding environmental priorities within HR functions. Ali et al. (2024) provided comprehensive cross-industry insights, showing that GHRM practices such as eco-centric recruitment, development, and performance incentives significantly improve corporate sustainability performance. The study highlighted how structured HR practices reinforce sustainability targets and foster accountability among employees.

Asghar et al. (2024) explored the configurations of green HR practices and identified combinations of green recruitment, training, and job analysis that led to optimal sustainability outcomes. Their findings underline the importance of strategic integration rather than isolated implementation, affirming that systemic alignment of HR functions enhances long-term sustainability. Khan et al. (2020) focused on manufacturing firms and confirmed that GHRM contributes meaningfully to sustainable performance. Their results show that green practices embedded in HR processes are effective in reducing environmental impact while improving operational efficiency.

Yong et al. (2020) further established that GHRM pathways including training, empowerment, and recruitment lead to measurable improvements in environmental performance. Their empirical results demonstrate that the institutionalization of green HR policies strengthens employee commitment to sustainability goals, particularly in manufacturing sectors. Malik et al. (2020) extended this understanding by linking GHRM with green intellectual capital, showing that sustainability is best achieved when HR practices support not only behavior but also knowledge creation and innovation. Their study confirms that green-oriented job roles and training foster a culture that continuously evolves toward environmental goals.

Earlier studies reinforce these findings. Mousa and Othman (2020) showed that green HRM enhances employee behavior and performance in environmentally sensitive industries. Jabbour and De Sousa (2016) found that GHRM, coupled with employee empowerment, improves organizational environmental performance. Similarly, Huo et al. (2022) demonstrated that in manufacturing SMEs, green HR practices have a performance-enabling impact, particularly when guided by clear frameworks.

In Tanzania, Mwita and Kinemo (2018) showed that green recruitment and selection contribute significantly to organizational performance by attracting candidates aligned with environmental values. Their study underscores the value of embedding green expectations early in the employment lifecycle. Together, these empirical studies confirm that GHRM practices are critical mechanisms through which firms can operationalize their sustainability commitments. They show that success in sustainable performance depends on how effectively green values are translated into the core of human resource functions.

3. METHODOLOGY AND DATA
3.1 Resource-based view theory
This study is anchored on the Resource-Based View (RBV) theory, which offers a strategic framework for understanding how internal organizational resources can drive sustained competitive advantage. According to Koch and Kok (1999), firms differ fundamentally in how they utilize resources whether physical, organizational, or human which leads to varying levels of efficiency and performance. Barney (2001) emphasized that these resources include not only tangible assets but also intangible elements such as management capabilities, organizational culture, and accumulated knowledge, which must be valuable, rare, inimitable, and non-substitutable to generate long-term advantage.

Within the context of this study, the RBV is particularly relevant in highlighting human resources as a central asset for sustainability. As Armstrong and Shimizu (2007) noted, organizations that can effectively acquire, develop, and retain specialized human capital are

better positioned to outperform competitors. Green Human Resource Management (GHRM) aligns with this premise by focusing on the recruitment, training, and deployment of employees with environmental awareness and skills. When these green capabilities are embedded into HR practices, they become part of the firm's strategic asset base difficult for rivals to replicate and essential for driving sustainability.

In manufacturing firms, where operational activities often have substantial environmental implications, integrating GHRM into core business functions becomes not just a strategic choice but a competitive necessity. Green recruitment ensures the inflow of talent aligned with environmental values, green training enhances environmental competencies, and green job analysis institutionalizes sustainability into daily work processes. These practices transform the workforce into a unique and non-substitutable asset, reinforcing the RBV's assertion that human capital is a key determinant of sustained organizational success. Thus, RBV supports the theoretical rationale for this study by illustrating how green-oriented human resource practices can serve as strategic levers for achieving environmental and organizational sustainability.

3.2. Method and model specification

This study was conducted at Bao Yan Huan Jian Iron & Steel Group, located in Calabar, Nigeria. The firm provides a suitable context for examining the relationship between green human resource management (GHRM) practices and organizational sustainability due to its scale, structure, and growing interest in sustainable operational practices. Calabar, a city known for its industrial activities and environmental initiatives, presents an ideal backdrop for this investigation.

To ensure a systematic and empirical approach, the research employed a survey design, which is well-suited for studies involving perception-based data collection across a broad population. A cross-sectional survey was adopted, allowing for the collection of data at a single point in time from diverse categories of staff within the organization. This design is particularly appropriate when the goal is to capture a snapshot of current GHRM practices and their perceived influence on sustainability outcomes, as recommended by Yusoff et al. (2020) and Huo et al. (2022).

The target population included senior, supervisory, junior, and contract staff of the organization, totaling 260 individuals. This inclusive approach helped ensure that varying levels of experience and job functions were represented, reflecting the multidimensional nature of HR practices emphasized by Malik et al. (2020) and Tang et al. (2018).

A simple random sampling technique was employed to ensure each staff member had an equal chance of being selected. This method minimizes selection bias and is commonly used in quantitative studies to increase generalizability (Teixeira et al., 2016). The sample size was calculated using the Taro Yamane formula with a 95% confidence level and a 5% margin of error. The resulting sample size of 188 participants is statistically adequate for the study's objectives and supports robust inferential analysis.

Quantitative data were gathered using a structured questionnaire developed from validated instruments in prior green HRM studies (e.g., Mousa & Othman, 2020; Ullah, 2017). The questionnaire included items measuring the three core dimensions of GHRM under review: green recruitment and selection, green training and development, and green job analysis, along with their influence on organizational sustainability.

Data analysis was performed using IBM SPSS Statistics version 23. To evaluate the effect of the independent variables on the dependent variable, simple linear regression analysis was applied. This method was selected due to its effectiveness in assessing the predictive strength of independent variables on a single dependent variable, which aligns with the structure of the

research hypotheses. Regression analysis is particularly useful for identifying the strength and significance of relationships between constructs, which is consistent with methods used in related empirical studies (Mwita & Kinemo, 2018; Jabbour & De Sousa, 2016).

The statistical outputs, including the coefficients, R-squared values, and significance levels, provided empirical grounding for assessing the extent to which GHRM practices influence sustainability. The use of regression models also aligns with the resource-based view (Barney, 2001), which underscores the importance of internal capabilities such as environmentally aligned human resource practices in driving sustainable competitive advantage.

The study adopted the regression model for the purpose of this study. The regression model was presented thus:

$$Y = \alpha + \beta X + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(i)}$$
$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(ii)}$$
$$SUS = f(GRS, GTD, GJA) \dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(iii)}$$
$$SUS = \alpha + \beta_1 GRS_1 + \beta_2 GTD_2 + \beta_3 GJA_3 + \varepsilon \dots\dots\dots\dots\dots\dots \text{(iv)}$$

Where:

$$SUS = \alpha + \beta GRS + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(v)}$$
$$SUS = \alpha + \beta GTD + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(vi)}$$
$$SUS = \alpha + \beta GJA + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(vii)}$$

Where	=	(α, $\beta1$, $\beta2$ - - - - $\beta4 \neq 0$……………….) are regression coefficients.
Where SUS	=	Sustainability
GRS	=	Green Recruitment and Selection
GTD	=	Green Training and Development
GJA	=	Green Job Analysis
bo	=	Regression constant
b_1- b_4	=	Regression parameters to be estimated
e	=	Stochastic error

4. RESULTS AND DISCUSSION OF FINDINGS

Impact of green recruitment and selection practice on sustainability of manufacturing firm

The hypothesis test examined whether green recruitment and selection practice significantly influence sustainability of manufacturing firm. The ANOVA result (Table 1) reported an F-statistic of 311.476 with a significance level of p = .000, indicating that the model is statistically significant. This implies that green recruitment and selection practices have a significant positive effect on the sustainability of manufacturing firm.

Table 1: Green recruitment and selection practice and sustainability

Model	Sum of Squares	DF	Mean Square	F	Sig
1 Regression	164.513	1	164.513	311.476	.000[b]
Residual	75.529	129	.528		
Total	240.041	130			

The model summary (Table 2) reveals an R-value of .828 and an R^2 of .685, showing that 68.5% of the variance in sustainability of manufacturing firm is explained by green recruitment and selection.

Table 2: Model summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the estimate	Durbin-Watson
1	.828[a]	.685	.683	.727	1

The coefficient (Table 3) indicates that green recruitment and selection positively and significantly predict sustainability of manufacturing firm (β = .828, t = 17.649, p < .001). These findings align with Tomcikova (2016) and Ahmad (2015), who emphasized the strategic role of recruitment in building environmentally responsible workforces. Hiring practices that align with environmental values ensure the onboarding of talent whose competencies contribute directly to long-term sustainability.

Table 3: Coefficients of green recruitment and selection and sustainability

Model	Unstandardized Coefficient B	Std Error	Standardized Coefficient Beta	T	Sig.
1 (Constant)	-.705	.179	.828	-3.946	.000
	.987	.056		17.649	.000

Influence of green training and development practice on the sustainability of manufacturing firm

To test the second hypothesis, the study assessed whether green training and development practice significantly impact sustainability outcomes in manufacturing firm. The ANOVA result (Table 4) yielded an F-statistic of 250.568 (p = .000), affirming the predictive relevance of the model.

Table 4: ANOVA – Green training and development and sustainability

Model	Sum of Suares	DF	Mean Square	F	Sig.
1 Regression	152.824	1	152.824	250.568	.000[b]
Residual	87.217	129	.610		
Total	240.041	130			

The model summary (Table 5) shows an R^2 of .637, meaning green training and development practice account for 63.7% of the variance in sustainability outcomes in manufacturing firms.

Table 5: Model Summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Durbin-Watson
1	.789[a]	.637	.649	.781	1

As shown in Table 6, green training and development practice significantly influences sustainability of manufacturing firm (β = .796, t = 15.829, p < .001). The results corroborate Yusoff et al. (2020) and Fapohunda et al. (2021), who argue that equipping employees with environmental knowledge strengthens sustainable behavior at the organizational level. Training initiatives tailored to sustainability enhance employee engagement with green policies and foster energy-efficient practices and waste reduction.

Table 6: Coefficients – Green training and development practice and sustainability

Model	Unstandardized Coefficient B	Std. Error	Standardized Coefficient Beta	T	Sig
1 (Constant)	.372	.134	.796	2.739	.007
Green training and development	.932	.059		15.829	.000

Effect of Green Job Analysis practice on Sustainability of manufacturing firm
The third hypothesis tested the impact of green job analysis practice on the sustainability of manufacturing firm. The ANOVA result in Table 7 reported an F-statistic of 232.517 (p = .000), indicating the model's significance.

Table 7: ANOVA – Green job analysis practice and sustainability

Model	Sum of Squares	Df	Mean Square	F	Sig
1 Regression	152.824	1	152.824	232.517	.000[b]
Residual	87.217	129	.610		
Total	240.041	130			

The model summary (Table 8) shows that green job analysis practice explains 67.5% of the variability in sustainability of manufacturing firm (R^2 = .675).

Table 8: Model Summary

Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Waston
1	.789[a]	.675	.652	.781	1

Table 9 displays a strong positive effect of green job analysis practice on sustainability manufacturing firm (β = .854, t = 15.829, p < .001). These findings are consistent with Mwita and Kinemo (2018) and Malik et al. (2020), who noted that clearly defined environmental roles and responsibilities improve environmental accountability and performance. Embedding green competencies in job descriptions ensures that sustainability is integrated into the core structure of work.

Table 9: Coefficients – Green job analysis practice and sustainability

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficient Beta	T	Sig
1 (Constant)	.372	.134	.854	2.739	.007
Green job analysis	.932	.059		15.829	.000

4.1 Discussion

The findings demonstrate that green recruitment and selection practice significantly influence sustainability of manufacturing firm. With a strong beta coefficient (β = 0.796, p ≤ 0.05), the analysis indicates that selecting employees with environmental awareness, skills, and values aligned with sustainability goals contributes meaningfully to firm performance. This outcome aligns with empirical evidence showing that green hiring strategies—those that prioritize

environmental values in job descriptions and candidate assessments positively affect long-term organizational viability and support eco-conscious operational cultures (Ali et al., 2024). Most respondents confirmed that using strategic, environmentally guided recruitment methods ensures that other HR functions are more effective, reinforcing the idea that talent alignment with green objectives lays a critical foundation for sustainable organizational practices (Asghar et al., 2024).

The study also found that green training and development practice exert a statistically significant effect on sustainability outcomes in manufacturing firm ($\beta = 0.796$, $p \leq 0.05$). Employees who undergo structured green training are better equipped to understand and implement environmentally responsible practices across their roles. These training initiatives instill behaviors and competencies that not only reduce waste and improve energy efficiency but also cultivate a workforce that proactively supports the organization's environmental mission. Such programs align employees' individual performance with broader sustainability objectives, enhancing both ecological and operational efficiency. As recent research confirms, integrating environmental education into employee development pipelines strengthens green capabilities across the workforce and boosts sustainable performance (Pasha & Akram, 2024; Yong et al., 2020).

Finally, the results reveal a strong positive relationship between green job analysis practice and sustainability of manufacturing firm ($\beta = 0.854$, $p \leq 0.05$), with 68.5% of respondents acknowledging its impact. Job analysis processes that embed environmental criteria such as specifying eco-related tasks and expectations lead to more environmentally accountable job roles and clearer sustainability-linked performance indicators. This not only guides recruitment and performance management but also fosters a corporate culture where sustainability is a formal, measurable aspect of each employee's role. The strategic integration of green job requirements into organizational workflows has been empirically shown to significantly enhance sustainable business practices, particularly in manufacturing contexts (Zaid & Jaaron, 2020; Malik et al., 2020).

5. CONCLUSION AND POLICY RECOMMENDATIONS.

This study underscores the central role of green human resource management practices in shaping the sustainability outcomes of manufacturing firms. The evidence from Bao Yan Huan Jian Iron & Steel Group, Calabar, demonstrates that green recruitment and selection, green training and development, and green job analysis practices are all significant predictors of sustainability of manufacturing firms. Each of these practices, when strategically designed and implemented, contributes directly to the firm's environmental performance, operational resilience, and long-term viability.

Green recruitment and selection emerged as a critical entry point, ensuring that individuals hired into the organization possess not only the technical competencies required for their roles but also a personal alignment with the company's environmental values. This alignment strengthens organizational commitment to sustainability and fosters a workforce culture that supports eco-conscious decision-making at all levels.

Green training and development were also found to play a pivotal role, equipping employees with the skills, knowledge, and awareness necessary to translate sustainability goals into day-to-day practice. Employees trained in environmental stewardship are more likely to engage in behaviors that conserve energy, reduce waste, and innovate environmentally sound solutions actions that cumulatively improve the sustainability profile of the organization.

The significance of green job analysis further highlights the importance of embedding environmental expectations directly into job descriptions and performance metrics. When roles

are structured around sustainability responsibilities and employees are held accountable to environmental standards, the organization as a whole becomes more responsive and proactive in addressing ecological challenges. This structured integration helps align individual performance with collective sustainability goals.

In sum, the study confirms that sustainability in the manufacturing sector is not merely a matter of corporate policy or compliance it is driven through human capital. HRM departments are uniquely positioned to institutionalize sustainability by aligning talent management strategies with environmental objectives.

To strengthen this alignment, management of manufacturing firms should prioritize green recruitment strategies that assess environmental compatibility in candidates. Investment in green training programmes should be sustained and expanded, ensuring that both new hires and existing employees understand their role in achieving environmental goals. Furthermore, job roles should be continually reviewed and redesigned to include explicit sustainability responsibilities, making environmental accountability a consistent feature of organizational performance.

For firms aiming to maintain competitiveness in an increasingly sustainability-driven global market, green HRM is not optional, it is essential. Embedding green values across recruitment, development, and role design will not only ensure regulatory compliance but also foster innovation, improve resource efficiency, and support long-term corporate survival in a changing environmental landscape.

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