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The Impact of Green Human Resource Management on Sustainability Performance in UAE Manufacturing Firms

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Abstract

This study examines the effect of Green Human Resource Management (GHRM) practices on Sustainability Performance in UAE manufacturing firms. Drawing on the Resource-Based View, the study argues that environmentally aligned human resource practices can function as internal organisational capabilities that enhance environmental, economic, and social outcomes. Specifically, the study investigates the direct effects of Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation on Sustainability Performance. Data were collected through a structured questionnaire from **306 managerial-level respondents** in UAE manufacturing firms and analysed using partial least squares structural equation modelling (PLS-SEM). The findings reveal that all three GHRM dimensions have positive and significant effects on Sustainability Performance. Green Hiring showed the strongest direct effect, indicating that recruiting employees with environmental awareness and sustainability-oriented values is a critical foundation for sustainable organisational outcomes. Green Training and Involvement also contributed significantly by enhancing employees' environmental knowledge and participation in sustainability initiatives. In addition, Green Performance Management and Compensation positively influenced Sustainability Performance by aligning employee evaluation and rewards with environmental

objectives. The model explained **73.3%** of the variance in Sustainability Performance and demonstrated strong predictive relevance. The study contributes to the GHRM and sustainability literature by providing empirical evidence from the underexplored UAE manufacturing context. Practically, the findings suggest that manufacturing firms can improve sustainability performance by embedding environmental objectives into recruitment, training, employee involvement, performance appraisal, and compensation systems.

Keywords: Green Human Resource Management, Green Hiring, Green Training and Involvement, Green Performance Management and Compensation, Sustainability Performance, UAE Manufacturing Sector. PLS-SEM.

1. Introduction

The manufacturing sector remains a major driver of economic development, employment creation, industrial capability, export performance, and technological advancement. At the same time, it is one of the sectors most closely associated with environmental pressures, including high energy consumption, intensive raw material use, greenhouse gas emissions, waste generation, and pollution. This dual role has made sustainable manufacturing an important concern for policymakers, managers, and researchers. As climate concerns, environmental regulations, and stakeholder expectations continue to intensify, manufacturing firms are increasingly expected to reduce environmental harm while maintaining competitiveness, productivity, and operational efficiency (Porter & van der Linde, 1995; Hart, 1995; Bashir et al., 2024).

Sustainability performance has therefore become a strategic priority for manufacturing firms. It is commonly understood through the triple bottom line perspective, which includes environmental, economic, and social dimensions. Environmental performance involves reducing emissions, waste, pollution, and resource consumption. Economic performance relates to efficiency, cost reduction, competitiveness, and long-term financial value. Social performance concerns employee wellbeing, workplace safety, community responsibility, and broader social contributions (Lozano, 2015; Purvis et al., 2019; Shoukat et al., 2024). Achieving these outcomes requires more than compliance with environmental regulations or investment in cleaner technologies. It also requires organisational systems that shape employee behaviour, build environmental capabilities, and embed sustainability into daily work routines.

Green Human Resource Management (GHRM) has emerged as an important internal mechanism for supporting sustainability performance. GHRM refers to the integration of environmental objectives into HR practices such as green hiring, green training and involvement, green performance management, and green compensation (Renwick et al., 2013; Tang et al., 2018; Yong et al., 2020). Through these practices, firms can strengthen employees' environmental awareness, develop green skills, encourage responsible workplace behaviour, and align employee actions with organisational sustainability goals (Shafaei et al., 2020; Zacher et al., 2023). From the Resource-Based View perspective, GHRM can be understood as a strategic organisational capability that helps firms develop valuable and difficult-to-imitate human resources for sustainability-oriented competitiveness (Barney, 2000; Hart, 1995).

The role of GHRM is particularly important because sustainability transformation is not driven by technology alone. Manufacturing firms may invest in cleaner production systems, resource-efficient processes, and environmental management tools, but the success of these initiatives depends heavily on employee knowledge, commitment, participation, and accountability. Employees are responsible for implementing environmental procedures, identifying opportunities for waste reduction, supporting energy-saving practices, and maintaining responsible production behaviour. Therefore, HR practices that recruit environmentally aware employees, provide green training, involve staff in sustainability

initiatives, and reward environmental performance can directly contribute to improved sustainability outcomes (Renwick et al., 2013; Guerci et al., 2016; Tang et al., 2018).

Although the relationship between GHRM and sustainability performance has attracted growing scholarly attention, the existing evidence remains uneven across regions and sectors. Prior studies show that GHRM can enhance employee green behaviour, environmental performance, and sustainable organisational outcomes (Mousa & Othman, 2020; Acquah et al., 2021; Al-Shammari et al., 2022; Ali et al., 2024; Bindeeba et al., 2025). However, much of the empirical evidence has been generated in Western and Asian contexts, while the Middle East and North Africa region remains comparatively underrepresented. This gap is important because institutional conditions, labour systems, industrial structures, regulatory environments, and sustainability priorities differ across countries. As a result, findings from other contexts may not fully explain how GHRM contributes to sustainability performance in the UAE manufacturing sector.

The UAE provides a relevant context for examining this issue. The country has placed sustainability and industrial diversification at the centre of its national development agenda through initiatives such as the UAE Green Agenda 2030, UAE Energy Strategy 2050, Dubai Industrial Strategy 2030, and UAE Net Zero 2050. These initiatives emphasise resource efficiency, clean energy, sustainable industrial development, innovation, and long-term carbon reduction. Manufacturing is a key component of this national transformation, contributing to economic diversification and industrial growth (Crupi & Schilirò, 2023). However, the sector also faces environmental challenges due to energy-intensive production, material waste, emissions, and uneven adoption of green practices. Evidence from the UAE context suggests that firms continue to face barriers in translating sustainability objectives into operational practice (Bashir et al., 2024).

Despite strong national policy direction, many UAE manufacturing firms still face challenges in embedding sustainability into organisational routines. These challenges include limited green skills, insufficient environmental awareness, weak employee involvement in sustainability initiatives, and performance systems that often prioritise productivity over environmental outcomes. In many firms, HR practices remain largely traditional, with limited integration of environmental criteria into recruitment, training, appraisal, and reward systems. This suggests that the adoption of GHRM in UAE manufacturing remains uneven, even though such practices may be essential for improving environmental, economic, and social performance (Guerci et al., 2016; Renwick et al., 2013; Yong et al., 2020; Shafaei et al., 2020).

This creates an important research gap. While previous studies indicate that GHRM can support sustainable organisational outcomes, limited empirical evidence explains the direct effects of specific GHRM dimensions on sustainability performance in UAE manufacturing firms. In particular, more research is needed to examine whether green hiring, green training and involvement, and green performance management and compensation contribute to sustainability performance in this context. Addressing this gap is important because UAE manufacturing firms are under increasing pressure to align human resource systems with

national sustainability priorities and stakeholder expectations (Crupi & Schilirò, 2023; Bashir et al., 2024).

Accordingly, this study examines the impact of Green Human Resource Management on Sustainability Performance in UAE manufacturing firms. GHRM is conceptualised through three dimensions: green hiring, green training and involvement, and green performance management and compensation. Sustainability performance is examined through environmental, economic, and social outcomes. By focusing on these direct relationships, the study provides a clearer understanding of how environmentally aligned HR practices contribute to sustainable organisational outcomes in the UAE manufacturing sector.

This study makes several contributions. First, it extends the GHRM literature by providing empirical evidence from an underexplored Middle Eastern manufacturing context. Second, it contributes to sustainability performance research by examining how specific green HRM dimensions influence environmental, economic, and social outcomes. Third, it advances the Resource-Based View by showing how green-oriented HR practices can function as internal organisational capabilities that support sustainability performance (Barney, 2000; Hart, 1995). Finally, the study offers practical insights for UAE manufacturing firms seeking to strengthen sustainability outcomes by embedding environmental objectives into recruitment, training, employee involvement, performance appraisal, and compensation systems.

2. Development of Conceptual Framework

This section develops the conceptual framework of the study by explaining the relationships between Green Human Resource Management dimensions and Sustainability Performance. The framework is based on the assumption that sustainability performance in manufacturing firms is influenced not only by technology, regulation, or operational systems, but also by the way employees are recruited, trained, involved, evaluated, and rewarded. Therefore, this study examines three dimensions of Green Human Resource Management: Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation. These dimensions are consistent with prior GHRM literature, which views green HRM as a bundle of HR practices designed to promote environmental awareness, green behaviour, and sustainable organisational outcomes (Renwick et al., 2013; Tang et al., 2018; Yong et al., 2020; Shafaei et al., 2020).

The framework is theoretically supported by the Resource-Based View. From this perspective, human resources are important internal capabilities that can help firms achieve superior organisational outcomes (Barney, 2000; Hart, 1995). When firms develop environmentally aware, skilled, and motivated employees, they are more likely to improve environmental, economic, and social performance. In addition, Stakeholder Theory suggests that firms face increasing pressure from governments, customers, employees, communities, and regulators to operate responsibly. Green HRM practices can help firms respond to these expectations by embedding sustainability into employee behaviour and organisational routines (Guerci et al., 2016). Sustainability Performance in this study reflects environmental, economic, and social outcomes, consistent with the triple bottom line perspective (Lozano, 2015; Purvis et al., 2019).

In this study, Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation are treated as independent variables, while Sustainability Performance is treated as the dependent variable. The proposed model suggests that each GHRM dimension has a direct positive effect on Sustainability Performance. This assumption is supported by prior studies showing that green HRM practices contribute to sustainable performance by shaping employee behaviour, strengthening organisational capabilities, and aligning HR systems with environmental goals (Mousa & Othman, 2020; Acquah et al., 2021; Al-Shammari et al., 2022; Ali et al., 2024; Bindeeba et al., 2025).

2.1 Green Hiring and Sustainability Performance

Green Hiring refers to the integration of environmental criteria into recruitment and selection practices. It involves attracting and selecting employees who possess environmental awareness, sustainability-oriented values, and the ability to support green organisational goals (Renwick et al., 2013; Tang et al., 2018). In manufacturing firms, employees' daily decisions and work practices can influence resource use, waste generation, energy consumption, and compliance with environmental procedures. Therefore, hiring employees with green knowledge and environmental commitment can strengthen the firm's ability to achieve sustainability outcomes.

Green Hiring can contribute to Sustainability Performance in several ways. First, it helps firms build a workforce that understands and supports environmental objectives. Second, it reduces the need for extensive behavioural correction after recruitment because employees already possess some degree of environmental awareness. Third, it supports the development of a green organisational culture, where sustainability becomes part of normal workplace behaviour. Prior studies indicate that employees' green values and behaviours are important foundations for organisational environmental performance and sustainability outcomes (Zacher et al., 2023; Shafaei et al., 2020).Based on this reasoning, the following hypothesis is proposed:

H1: Green Hiring has a positive effect on Sustainability Performance.

2.2 Green Training and Involvement and Sustainability Performance

Green Training and Involvement refers to the provision of environmental training and the active participation of employees in sustainability-related activities. Green training develops employees' knowledge of environmental management, waste reduction, energy efficiency, pollution prevention, and sustainable work practices. Employee involvement allows staff to contribute ideas, participate in green initiatives, and support continuous environmental improvement (Renwick et al., 2013; Yong et al., 2020).

This dimension is important because sustainability performance cannot be achieved through policies alone. Employees must understand what sustainability means in their specific roles and how their actions affect organisational outcomes. In manufacturing firms, where operational activities often involve high resource consumption and environmental impact, employee training and involvement are particularly important. Previous research shows that green training and employee involvement can improve employee green behaviour,

environmental awareness, and organisational sustainability performance (Mousa & Othman, 2020; Acquah et al., 2021; Ali et al., 2024).

When employees are trained and involved, they are more likely to identify inefficiencies, reduce waste, comply with environmental standards, and participate in improvement initiatives. This can improve environmental performance, reduce operating costs, enhance productivity, and strengthen social responsibility. Therefore, Green Training and Involvement is expected to improve Sustainability Performance. Accordingly, the following hypothesis is proposed:

H2: Green Training and Involvement has a positive effect on Sustainability Performance.

2.3 Green Performance Management and Compensation and Sustainability Performance

Green Performance Management and Compensation refers to the integration of environmental objectives into employee performance appraisal, evaluation, incentives, and reward systems. This practice ensures that employees are not only encouraged to support sustainability goals but are also held accountable for their environmental behaviour and contributions (Renwick et al., 2013; Tang et al., 2018).

Performance management systems influence employee priorities. If environmental goals are included in appraisal criteria, employees are more likely to pay attention to sustainability-related responsibilities. Similarly, compensation and reward systems can motivate employees to participate in green initiatives, reduce waste, conserve energy, and support organisational sustainability targets. This is consistent with the view that green HRM practices are most effective when environmental expectations are reinforced through appraisal, rewards, and organisational accountability systems (Guerci et al., 2016; Yong et al., 2020).

In manufacturing firms, this dimension is especially relevant because sustainability outcomes depend on consistent employee behaviour across production, operations, quality control, maintenance, and management functions. When green performance expectations are clearly defined and rewarded, employees are more likely to align their behaviour with the firm's sustainability objectives. Prior studies have shown that green HRM systems can enhance sustainable performance by linking employee motivation and organisational routines to environmental objectives (Al-Shammari et al., 2022; Ali et al., 2024; Bindeeba et al., 2025). Therefore, Green Performance Management and Compensation is expected to enhance Sustainability Performance. Thus, the following hypothesis is proposed:

H3: Green Performance Management and Compensation has a positive effect on Sustainability Performance.

2.4 Proposed Conceptual Framework

The proposed conceptual framework positions the three dimensions of Green Human Resource Management as direct predictors of Sustainability Performance. Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation

represent the independent variables, while Sustainability Performance represents the dependent variable. Sustainability Performance reflects the firm's environmental, economic, and social outcomes, consistent with the triple bottom line perspective of sustainability (Lozano, 2015; Purvis et al., 2019).

The model suggests that firms can improve Sustainability Performance by embedding environmental objectives into key HRM practices. Green Hiring helps firms attract and select environmentally responsible employees who possess environmental awareness, green values, and sustainability-oriented competencies (Renwick et al., 2013; Tang et al., 2018). Green Training and Involvement develops employees' environmental knowledge, green skills, and participation in sustainability-related activities, thereby strengthening their ability to support organisational sustainability goals (Yong et al., 2020; Shafaei et al., 2020; Zacher et al., 2023). Green Performance Management and Compensation reinforces green behaviour by linking employee appraisal, rewards, and incentives to environmental objectives (Renwick et al., 2013; Guerci et al., 2016; Tang et al., 2018).

Together, these practices create an integrated HRM system that supports sustainable organisational performance. From the Resource-Based View, such green-oriented HR practices can be understood as internal organisational capabilities that help firms develop valuable human resources for sustainability performance (Barney, 2000; Hart, 1995). Prior empirical studies also support the argument that GHRM practices contribute positively to sustainable performance by shaping employee behaviour, organisational routines, and environmental responsibility (Mousa & Othman, 2020; Acquah et al., 2021; Al-Shammari et al., 2022; Ali et al., 2024; Bindeeba et al., 2025).

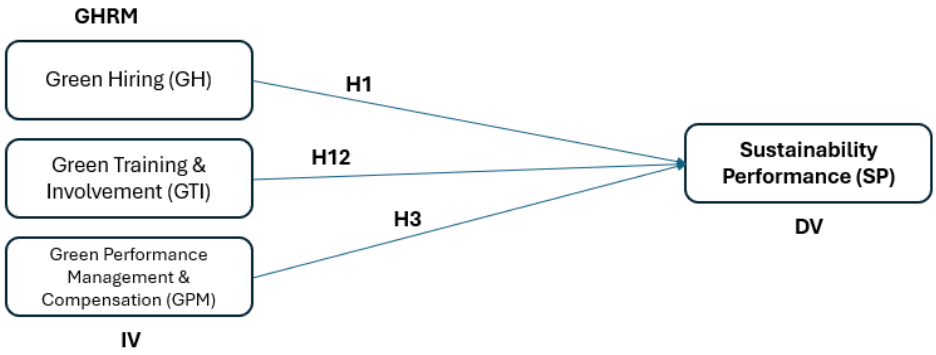

Figure 1. Proposed conceptual framework

Note. Green Hiring → Sustainability Performance; Green Training and Involvement → Sustainability Performance; Green Performance Management and Compensation → Sustainability Performance.

3. Framework Modelling and Assessment

This study employed a cross-sectional survey design involving UAE manufacturing firms. Data were collected from managerial and professional respondents who had sufficient knowledge of human resource practices and sustainability-related activities within their

organisations. Out of 450 distributed questionnaires, 361 were returned. After removing incomplete responses and outliers, 306 valid responses were retained, representing a final usable response rate of 68.0%. This sample size was considered adequate for analysis using PLS-SEM.

The proposed framework was assessed using a two-stage PLS-SEM procedure. In the first stage, the measurement model was evaluated to establish the reliability and validity of the constructs. In the second stage, the structural model was assessed to test the hypothesised relationships between Green Hiring, Green Training and Involvement, Green Performance Management and Compensation, and Sustainability Performance. The results of these assessments are presented in the following subsections.

3.1 Measurement Model Assessment

Before testing the hypothesised relationships, the measurement model was assessed to establish reliability and validity. Internal consistency reliability was examined using Cronbach's alpha and composite reliability, while convergent validity was assessed using indicator loadings and the average variance extracted (AVE).

As shown in Table 1, all constructs demonstrated acceptable internal consistency reliability. Cronbach's alpha values ranged from **0.672 to 0.806**, while composite reliability values ranged from **0.792 to 0.861**. These values indicate that the constructs achieved an acceptable level of reliability.

Convergent validity was also assessed through indicator loadings and AVE values. The loading ranges for all constructs were above **0.60**, indicating that the indicators contributed adequately to their respective constructs. The AVE values for Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation were above the recommended threshold of **0.50**, confirming adequate convergent validity for these constructs.

However, Sustainability Performance recorded an AVE value of **0.433**, which is slightly below the conventional threshold of 0.50. Despite this, the construct was retained because its composite reliability value was above **0.70**, its indicator loadings were acceptable, and the construct was theoretically important to the study. Therefore, the measurement model was considered adequate for structural model assessment.

Table 1. Reliability and convergent validity of measurement model

Construct	Loading range	Cronbach's alpha	Composite reliability	AVE
GH	0.701–0.754	0.693	0.813	0.521
GTI	0.684–0.757	0.806	0.861	0.508
GPM	0.699–0.737	0.767	0.843	0.518
SP	0.621–0.712	0.672	0.792	0.433

Note. GH = Green Hiring; GTI = Green Training and Involvement; GPM = Green Performance Management and Compensation; SP = Sustainability Performance.

Overall, the results indicate that the measurement model achieved acceptable reliability and sufficient convergent validity, supporting its suitability for testing the hypothesised structural relationships.

3.2 Structural Model Assessment

After confirming the adequacy of the measurement model, the structural model was assessed to test the hypothesised relationships between the three dimensions of Green Human Resource Management and Sustainability Performance. Specifically, the model examined the direct effects of Green Hiring (GH), Green Training and Involvement (GTI), and Green Performance Management and Compensation (GPM) on Sustainability Performance (SP). The assessment included collinearity diagnostics, path coefficient estimation, effect size, and hypothesis testing.

Collinearity was first examined using the variance inflation factor (VIF). The VIF values for the predictor constructs were below the conservative threshold of **3.3** and the commonly accepted threshold of **5.0**, indicating that multicollinearity was not a concern in the structural model. Therefore, the estimated path coefficients were considered reliable for hypothesis testing.

Bootstrapping with **5,000 resamples** was used to evaluate the significance of the hypothesised paths. As shown in Table 2, all three hypothesised relationships were positive and statistically significant.

Green Hiring had a positive and significant effect on Sustainability Performance (**$\beta = 0.774$, $t = 41.600$, $p < 0.001$**), supporting **H1**. This suggests that firms that incorporate environmental criteria into recruitment and selection are more likely to achieve stronger sustainability outcomes.

Green Training and Involvement also had a positive and significant effect on Sustainability Performance (**$\beta = 0.401$, $t = 8.259$, $p < 0.001$**), supporting **H2**. This indicates that providing employees with environmental training and involving them in sustainability-related initiatives contributes positively to organisational sustainability performance.

Green Performance Management and Compensation had a positive and significant effect on Sustainability Performance (**$\beta = 0.365$, $t = 9.622$, $p < 0.001$**), supporting **H3**. This implies that integrating environmental criteria into performance appraisal and reward systems encourages employee behaviours that support sustainability outcomes.

The effect size results further indicate that the three predictors made meaningful contributions to Sustainability Performance. Overall, the findings provide empirical support for the proposed model and confirm that the dimensions of Green Human Resource Management significantly enhance Sustainability Performance in manufacturing firms.

Table 2. Structural model results and hypothesis testing

Hypothesis	Relationship	β	SE	t-value	p-value	95% CI	f²	Decision
H1	GH → SP	0.774	0.019	41.600	<0.001	[0.759, 0.833]	0.495	Supported
H2	GTI → SP	0.401	0.052	8.259	<0.001	[0.325, 0.529]	0.344	Supported
H3	GPM → SP	0.365	0.038	9.622	<0.001	[0.291, 0.439]	0.563	Supported

Note. GH = Green Hiring; GTI = Green Training and Involvement; GPM = Green Performance Management and Compensation; SP = Sustainability Performance; CI = confidence interval.

The explanatory power of the model was assessed using the coefficient of determination. As reported in Table 3, the three dimensions of Green Human Resource Management, namely Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation, explained **73.3%** of the variance in Sustainability Performance (**R^2 = 0.733; adjusted R^2 = 0.731**). This indicates that the model has substantial explanatory power, as the predictor constructs account for a large proportion of the variation in Sustainability Performance. Predictive relevance was assessed using the **Q^2 statistic**. The Q^2 value for Sustainability Performance was **0.702**, which is greater than zero. This indicates that the model has strong predictive relevance and is capable of predicting Sustainability Performance.

Table 3. Explanatory power and predictive relevance

Endogenous construct	R^2	Adjusted R^2	Q^2
SP	0.733	0.731	0.702

Note. SP = Sustainability Performance.

Overall, the results show that the structural model has strong explanatory and predictive capability. This suggests that the three GHRM dimensions provide a meaningful basis for explaining Sustainability Performance.

4. Discussion of Findings

This study examined the influence of three dimensions of Green Human Resource Management [Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation] on Sustainability Performance. The structural model results provide strong empirical support for the proposed model. All three hypothesised relationships were positive and statistically significant, indicating that green-oriented HR practices play an important role in improving sustainability outcomes. This finding is consistent with prior GHRM studies which show that environmentally aligned HR practices can strengthen employee green behaviour, organisational environmental responsibility, and sustainable performance (Renwick et al., 2013; Tang et al., 2018; Mousa & Othman, 2020; Yong et al., 2020; Shafaei et al., 2020; Ali et al., 2024; Bindeeba et al., 2025).

The model also demonstrated strong explanatory and predictive power. The three GHRM dimensions explained 73.3% of the variance in Sustainability Performance, with an adjusted R^2 value of 0.731. In addition, the Q^2 value of 0.702 confirms that the model has strong predictive relevance. These results suggest that GHRM practices are not only statistically significant predictors of Sustainability Performance but also practically meaningful for manufacturing firms. The interpretation of explanatory power and predictive relevance is consistent with established PLS-SEM guidance (Hair et al., 2022; Henseler et al., 2016; Ringle et al., 2020). However, because the study uses survey data, the results should also be interpreted with awareness of potential common method issues, as highlighted in methodological literature (Podsakoff et al., 2012).

4.1 Effect of Green Hiring on Sustainability Performance

The results show that Green Hiring has a positive and significant effect on Sustainability Performance ($\beta = 0.774$, $t = 41.600$, $p < 0.001$), supporting H1. This was the strongest path coefficient in the model, indicating that recruitment and selection practices that incorporate environmental values and competencies are highly important for improving sustainability outcomes.

This finding suggests that firms that prioritise environmental awareness, green knowledge, and sustainability-oriented attitudes during hiring are more likely to build a workforce capable of supporting environmental, economic, and social performance. Sustainability performance is commonly understood through environmental, economic, and social dimensions, consistent with the triple bottom line view (Lozano, 2015; Purvis et al., 2019; Shoukat et al., 2024). Employees selected with green values may be more willing to comply with environmental policies, participate in sustainability initiatives, reduce waste, and support responsible organisational practices.

From the Resource-Based View perspective, Green Hiring helps firms acquire valuable human resources that can support sustainability-oriented capabilities (Barney, 2000; Hart, 1995). In the manufacturing context, this is especially important because sustainability performance depends heavily on employees' operational decisions, environmental awareness, and day-to-day work behaviour. Therefore, hiring employees with the right environmental mindset can create a strong foundation for sustainability performance. This also aligns with the argument that environmental responsibility and competitiveness can reinforce each other when firms develop appropriate internal capabilities (Porter & van der Linde, 1995).

4.2 Effect of Green Training and Involvement on Sustainability Performance

Green Training and Involvement also had a positive and significant effect on Sustainability Performance ($\beta = 0.401$, $t = 8.259$, $p < 0.001$), supporting H2. This result indicates that training employees on environmental practices and involving them in sustainability-related activities contributes meaningfully to organisational sustainability outcomes.

Green training improves employees' knowledge of environmental policies, resource efficiency, waste reduction, energy conservation, and sustainable work practices. When employees understand how their actions affect environmental and organisational outcomes,

they are more likely to behave in ways that support sustainability. Employee involvement also plays an important role because employees who participate in green initiatives are more likely to feel responsible for sustainability goals. This supports earlier findings that GHRM practices can promote green behaviour and sustainability-oriented employee participation (Guerci et al., 2016; Zacher et al., 2023).

This finding implies that sustainability performance cannot be achieved through top-down policies alone. Employees must be trained, informed, and actively involved. In manufacturing firms, where production processes often involve energy use, material consumption, emissions, and waste generation, employee participation is particularly important. Green Training and Involvement therefore serves as a mechanism through which sustainability objectives are translated into practical workplace behaviour. This is consistent with previous evidence showing that GHRM contributes to sustainable performance by strengthening employee capability and organisational commitment to environmental goals (Acquah et al., 2021; Al-Shammari et al., 2022; Ali et al., 2024).

4.3 Effect of Green Performance Management and Compensation on Sustainability Performance

The results further show that Green Performance Management and Compensation has a positive and significant effect on Sustainability Performance ($\beta = 0.365$, $t = 9.622$, $p < 0.001$), supporting H3. This means that firms that include environmental criteria in performance appraisal and reward systems are more likely to achieve stronger sustainability outcomes.

This finding highlights the importance of accountability and incentives. When employees are evaluated and rewarded based on environmental goals, they are more likely to take sustainability responsibilities seriously. Green performance appraisal clarifies expectations, while green compensation reinforces desired behaviour. Together, these practices can encourage employees to reduce waste, conserve resources, follow environmental procedures, and contribute to organisational sustainability targets. This supports the view that green HR systems work best when recruitment, training, appraisal, and rewards are aligned with environmental objectives (Renwick et al., 2013; Tang et al., 2018; Yong et al., 2020).

Although the path coefficient for Green Performance Management and Compensation was lower than that of Green Hiring, its effect size was the largest in the model ($f^2 = 0.563$). This suggests that performance and reward systems make a strong substantive contribution to explaining Sustainability Performance. In practical terms, this means that firms should not only hire and train environmentally responsible employees but also ensure that appraisal and compensation systems reinforce green behaviour.

4.4 Overall Interpretation

Overall, the findings show that the three dimensions of Green Human Resource Management significantly enhance Sustainability Performance. Green Hiring had the strongest direct relationship with Sustainability Performance, suggesting that selecting employees with environmental awareness and green values is a critical starting point. Green Training and Involvement further strengthens sustainability outcomes by developing employee knowledge

and participation. Green Performance Management and Compensation reinforce sustainability by aligning employee evaluation and rewards with environmental objectives.

The substantial R^2 value indicates that the model explains a large proportion of Sustainability Performance. This suggests that GHRM is an important organisational mechanism for improving environmental, economic, and social outcomes. The strong Q^2 value further confirms that the model has predictive relevance, meaning that the three GHRM dimensions provide a useful basis for predicting sustainability performance in manufacturing firms.

The findings also support the argument that sustainability performance is not only a technological or regulatory issue. It is also a human resource issue. Manufacturing firms may invest in cleaner technologies and environmental systems, but these investments are unlikely to produce strong sustainability outcomes unless employees are selected, trained, involved, evaluated, and rewarded in ways that support sustainability goals. This is especially relevant in the UAE, where industrial diversification and sustainability transformation are important national priorities, but firms still face practical barriers in embedding sustainability into organisational routines (Crupi & Schilirò, 2023; Bashir et al., 2024).

4.5 Practical Implications

The findings offer several practical implications for manufacturing firms. First, firms should integrate environmental criteria into recruitment and selection processes. Job descriptions, interview questions, and selection criteria should reflect the organisation's sustainability priorities.

Second, firms should invest in regular green training programmes. These programmes should not only provide general environmental awareness but also focus on practical skills related to waste reduction, energy efficiency, pollution prevention, and sustainable production practices.

Third, employees should be actively involved in sustainability initiatives. Firms can create green teams, suggestion systems, environmental improvement projects, and employee participation platforms to encourage bottom-up sustainability contributions.

Fourth, performance appraisal and compensation systems should include environmental indicators. Employees should be evaluated and rewarded for supporting green practices, reducing waste, improving resource efficiency, and contributing to sustainability targets. These implications are consistent with prior GHRM research showing that sustainability outcomes improve when environmental objectives are embedded into the full HRM system rather than treated as isolated initiatives (Mousa & Othman, 2020; Shafaei et al., 2020; Acquah et al., 2021; Bindeeba et al., 2025).

5. Conclusion

This study examined the effect of Green Human Resource Management dimensions on Sustainability Performance in UAE manufacturing firms. Specifically, the study tested the direct influence of Green Hiring, Green Training and Involvement, and Green Performance Management and Compensation on Sustainability Performance. The findings provide strong empirical support for the proposed model, confirming that all three GHRM dimensions have

positive and significant effects on Sustainability Performance.

The results show that Green Hiring has the strongest direct relationship with Sustainability Performance. This indicates that recruiting and selecting employees with environmental awareness, green values, and sustainability-related competencies is a critical foundation for improving organisational sustainability outcomes. Green Training and Involvement also significantly improves Sustainability Performance, suggesting that employees need to be equipped with environmental knowledge and actively involved in sustainability initiatives. In addition, Green Performance Management and Compensation positively influences Sustainability Performance, showing that appraisal and reward systems linked to environmental objectives can motivate employees to support sustainability goals.

The model demonstrated substantial explanatory power, with the three GHRM dimensions explaining **73.3%** of the variance in Sustainability Performance. The Q^2 value of **0.702** also confirmed strong predictive relevance. These results indicate that environmentally aligned HR practices are not only statistically significant but also practically important for improving sustainability performance in manufacturing firms.

The study contributes to the Green Human Resource Management literature by providing empirical evidence from the UAE manufacturing sector, a context that remains relatively underexplored. It also supports the Resource-Based View by showing that green-oriented HR practices can function as strategic internal capabilities that enhance environmental, economic, and social performance. By examining specific GHRM dimensions rather than treating GHRM as a single broad construct, the study provides a clearer understanding of which HR practices contribute to sustainability outcomes.

From a managerial perspective, the findings suggest that UAE manufacturing firms should integrate sustainability objectives into core HR functions. Firms should include environmental criteria in recruitment and selection, provide regular green training, involve employees in sustainability initiatives, and link performance appraisal and compensation systems to environmental goals. Such practices can help firms build a workforce that is capable, motivated, and accountable for achieving sustainability performance.

Despite its contributions, the study has some limitations. First, the data were collected using a cross-sectional survey design, which limits the ability to establish causal relationships over time. Future studies could use longitudinal designs to examine how GHRM practices influence sustainability performance across different stages of organisational development. Second, the study focused on manufacturing firms in the UAE, which may limit the generalisability of the findings to other sectors or countries. Future research could compare different industries or examine similar relationships in other GCC or MENA economies. Third, the study examined three GHRM dimensions as direct predictors of Sustainability Performance. Future studies may extend the model by including mediating or moderating variables such as green innovation, green organisational culture, environmental leadership, or employee green behaviour.

Overall, this study concludes that Green Human Resource Management is an important driver

of Sustainability Performance in UAE manufacturing firms. The findings demonstrate that sustainability performance is not achieved through technology and regulation alone; it also depends on how firms manage, develop, involve, evaluate, and reward their employees. By embedding environmental objectives into HR practices, manufacturing firms can strengthen their environmental, economic, and social performance while supporting broader national sustainability goals.

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