

# Impact of Green HRM Practices and Employee Green Perception on Sustainable Organizational Performance

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## Abstract

Green human resource management (GHRM) methods can assist firms in aligning their business strategy and achieving long-term organizational performance. HRM researchers largely agree that employees' opinions of HR practices substantially impact their efficacy. The study investigates the impact of GHRM practices in green recruitment and selection (GRS), green training and development (GTD), green compensation and benefits (GCB), and employee green perception (EGP) on sustainable organizational performance (SOP) in Ghana, taking into account the mediating role of employee green behavior (EGB). Data was collected from 350 HR specialists and employees working for various Ghanaian manufacturing and service organizations to meet the study's aims. The data is acquired through a self-administered questionnaire. The data is analyzed using the smart PLS 4 structural equation modeling technique. The findings indicate that green recruitment and selection (GRS), green training and development (GTD), and employee green perception (EGP) all influence employee green behavior (GEB). The data also suggest that green training and development (GTD) and green recruitment and selection (GRS) have an impact on sustainable organizational performance (SOP). However, it was discovered that green compensation and benefits (GCB) have no meaningful effect on employee green behavior or sustainable organizational performance. The study has theoretical, methodological, and practical consequences for stakeholders, including academics, practitioners, legislators, and HR specialists.

**Keywords:** Employees Green Behavior, Employee Green Perception, Green HRM Practices, Sustainable Organizational Performance

## 1. Introduction

Environmental concerns have increasingly threatened humanity, prompting global organizations, regulatory bodies, and NGOs to advocate for environmentally sustainable business practices to address climate change and ecological degradation. (Tweneboea Kodua et al., 2022). As businesses face pressure to adopt innovative, eco-friendly strategies, the focus on green management practices has intensified. The Human Resources (HR) department plays a crucial role in promoting these practices. Mousa & Othman, (2020) emphasize that HR departments are essential for executing policies that enhance sustainable performance and provide a competitive edge. Green Human Resource Management (GHRM) has gained prominence for its role in fostering green workplace cultures through environmentally friendly policies (Ahakwa et al., 2021). GHRM integrates environmental consciousness into HR processes such as recruitment, development, and compensation, aiming to boost productivity and organizational sustainability (Anwar et al., 2020).

Despite significant advancements, there remains a notable gap in research on GHRM in Sub-Saharan Africa, where sustainability concerns have historically received less attention. (Rubel et al., 2020). This is particularly pertinent in Ghana, which faces severe ecological issues and poorly enforced environmental laws (Ofosuhene, 2024). Ghana's manufacturing and service sectors, crucial for economic development, are major contributors to environmental pollution (Suleman et al., 2022). Adopting green practices in these sectors is critical to mitigating their environmental impact. Research indicates that companies incorporating sustainable practices gain a competitive advantage through cost savings and enhanced earnings. (Amjad et al., 2021).

Understanding employee perceptions of GHRM practices is essential, as these perceptions significantly influence

employee behavior and organizational performance (Van Beurden et al., 2021). This study evaluates the effects of GHRM practices and employee green perceptions on sustainable organizational performance. Specifically, it seeks to examine the direct impact of GHRM practices on sustainable organizational performance, assess the effect of GHRM practices on employee green behavior, investigate the influence of employee green perception on green behavior, analyze the impact of employee green behavior on organizational performance, and explore the mediating role of employee green behavior in the relationship between GHRM practices and sustainable organizational performance.

The study stands out for its integrated approach to studying the relationship between GHRM practices, employee green perception, employee green behavior, and long-term organizational performance. By linking these characteristics, the study improves conceptual understanding and makes practical recommendations for promoting sustainable business behaviors (Garavan et al., 2023). The findings will help firms link HRM strategy with environmental goals and foster a culture of sustainability.

## **2. Literature Review and Theoretical Framework**

### *2.1 Theoretical Background*

Saeed et al., (2022) emphasize the integration of ecological sustainability into Human Resource Management (HRM) through the notion of "environmentally conscious HRM." This study applies the Resource-based View (RBV) and Ability, Motivation, and Opportunity (AMO) theory to investigate the links between Green Human Resource Management (GHRM) practices, employee green perception, employee green behavior, and sustainable organizational performance.

The resource-based approach to HRM emphasizes how a firm's resources influence its operations and competitive advantage. These resources are categorized as institutional, economic, technological, human, tangible, and credible (Egbuta Olive & Omojola Olugbenga, 2021). The Resource-Based View (RBV) theory suggests that HRM practices should strengthen an organization's competitive advantage by effectively managing and utilizing unique internal resources to achieve its goals (Unsworth et al., 2021). Internal resources, particularly human capital, are crucial for a firm's performance and competitive advantage (Yong, Yusliza, Ramayah, et al., 2020). Therefore, building a successful business requires investing in human capital to enhance awareness of critical human factors and adopting innovative organizational strategies to improve efficiency and maintain a competitive edge that is difficult to replicate (Renwick et al., 2013). In the current study, we use RBV's theory to explain how an organization can use selected HRM practices to harness the skills of its human resources to achieve sustainable organizational performance. According to AMO theory, High-Performance Work Systems (HPWS) are made up of three interwoven components: a work organization that provides employees with the opportunity for direct participation in operational decisions (Opportunity), and human resources practices that increase workforce skills (Ability), and creates incentives for workers to participate effectively (Motivation) (Appelbaum et al., 2001). Businesses implement these practices at work to enhance operational efficiency. The AMO theory's components include: Ability: Workers in HPWS need better skills and knowledge across a broad front- including basic skills, technical and occupational-specific skills, and leadership and social skills to be effective decision-makers (Appelbaum et al., 2001). HR strategies such as recruiting, selection, and training guarantee that employees possess the appropriate skills and competencies (Al-Swidi et al., 2021). Effective practices reduce attrition and improve morale by providing staff with relevant information and abilities (Egbuta Olive & Omojola Olugbenga, 2021). Motivation: HRM strategies that evaluate and reward employees encourage them to exceed performance expectations. To encourage employees to put forth discretionary effort, businesses can offer three primary incentives: intrinsic rewards, financial or extrinsic rewards, and a long-term stake in the business. This is frequently accomplished in an HPWS by tying compensation to team or business performance (Appelbaum et al., 2001). Opportunity-HPWS decentralizes information collection and processing to non-managerial staff members, who utilize the information to solve issues and make operational choices. Thus, the work is organized in a more participatory approach (Appelbaum et al., 2001). Therefore, according to AMO Theory, GHRM practices improve employees' abilities, motivation, and opportunities, resulting in better environmental and organizational outcomes. Specifically, green recruiting and selection guarantee that employees have the appropriate environmental abilities; green training and development improve these skills; green compensation and benefits inspire employees to achieve sustainability goals. Employee involvement and perception give opportunities for engagement in environmental projects.

### *2.2 GHRM Practices*

Green Human Resource Management (GHRM) is becoming more popular as an approach for reducing environmental impact and improving sustainability inside enterprises (Yong et al., 2020). GHRM methods, such

as waste reduction and carbon footprint management, have been investigated in a variety of industries, including healthcare (Das & Dash, 2022; Luo et al., 2024; Mousa & Othman, 2020; Pham et al., 2019), manufacturing (Masri & Jaaron, 2017; Nejati et al., 2017; Sathyamoorthi et al., 2023; Yusliza et al., 2021), hospitality (Kim et al., 2019; Okumus et al., 2019; Tanveer et al., 2024; Umrani et al., 2020), and education (Anwar et al., 2020; Gilal et al., 2019; Saif et al., 2023)

According to Ali et al., (2024), GHRM includes environmental policies that promote employee knowledge and lower carbon footprints. It is defined as using human resource management approaches to promote environmentally friendly behavior and a commitment to sustainability. GHRM is critical for understanding how HRM systems affect environmental consequences. Tang et al., (2018) define GHRM as eco-friendly HR practices like green performance management, hiring and selection, and training. Wikhamn, (2019) explains that GHRM connects HRM methods with economic, social, and environmental goals.

### 2.2.1 Green Recruitment and Selection

Green recruitment entails including environmental criteria in job descriptions and leveraging green branding to attract qualified people (Khan & Muktar, 2024; Tang et al., 2018). Green recruitment and selection seek candidates who are committed to environmental responsibility (Khan & Muktar, 2024)

### 2.2.2 Green Training and Development

Green training and development systems are intended to provide personnel with the information and abilities required for environmental protection (Tweneboa Kodua et al., 2022). Investing in green training improves staff competencies and aligns them with organizational sustainability objectives (Khan & Muktar, 2024)

### 2.2.3 Green Compensation and Benefits

Green remuneration and benefits include financial and non-financial incentives to encourage employees to pursue environmental goals (Tweneboa Kodua et al., 2022). These incentives, such as bonuses and extra time off, promote eco-friendly behavior and increase overall performance (Amjad et al., 2021).

## 2.3 Employee Green Perception

Employee perceptions of HR processes majorly impact their behavior and performance (Jiang et al., 2017). Positive perceptions of green practices result in higher uptake and performance (Filimonau et al., 2023). Understanding these attitudes is critical for promoting pro-environmental behavior and achieving organizational sustainability.

## 2.4 Employee Green Behavior

Employee engagement in green practices is crucial to the success of organizational greening programs (Unsworth et al., 2021). GHRM activities such as recruiting, training, and performance management considerably impact green behaviors (Gill et al., 2021). According to Amrutha & Geetha (2021), employee green behavior is defined as scalable in-role and extra-role workplace behaviors that are critical to the sustainability of the environment.

## 2.5 Sustainable Organizational Performance

Sustainable Organizational Performance (SOP) is an organization's ability to achieve environmental goals and promote sustainability (Tweneboa Kodua et al., 2022). SOP is related to benefits such as cost savings, competitive advantage, and improved reputation (Jabbour & De Sousa Jabbour, 2016). GHRM methods support SOP by aligning personnel with business sustainability goals and improving overall performance (Khan & Muktar, 2024).

# 3. Research Hypothesis

## 3.1 GHRM Practices and Sustainable Organizational Performance

Research demonstrates that GHRM practices have a favorable impact on organizational sustainability and performance (Umrani et al., 2020; Yong, Yusliza, & Fawehinmi, 2020). Green recruitment, training, and remuneration help to improve environmental outcomes by connecting employees with sustainability objectives (Pham et al., 2019) So, we postulate the first hypothesis:

**H1a:** Green recruitment and selection substantially impact sustainable organizational performance.

**H1b:** Green training and development substantially impact sustainable organizational performance.

**H1c:** Green compensation and benefits substantially impact sustainable organizational performance.

3.2 GHRM Practices and Employee Green Behavior

GHRM practices are intended to encourage employee green behavior, which includes actions that help the environment. Effective GHRM strategies encourage employees to follow environmentally friendly activities and contribute to company sustainability. So, we hypothesize:

**H2a:** Green Recruitment and Selection significantly impacts Employee Green Behavior.

**H2b:** Green Training and Development significantly affects Employee Green Behavior.

**H2c:** Green Compensation and Benefits significantly influences Employee Green Behavior.

3.3 Employee Green Perception and Employee Green Behavior

Employee views of HRM procedures are critical in affecting their environmental behavior. Employees who believe their company is devoted to environmental goals are more inclined to take environmentally responsible actions. So, we hypothesize:

**H3:** Employee Green Perception significantly impacts Employee Green Behavior.

3.4 Employee Green Behavior and Sustainable Organizational Performance

Employee green behavior, such as conservation and recycling, improves company sustainability. Employees who engage in green practices help to improve environmental performance and overall corporate effectiveness. So, we hypothesize:

**H4:** Employee green behavior significantly affects Sustainable Organizational Performance.

3.5 Mediating Role of Employee Green Behavior

Employee green behavior, such as conservation and recycling, improves company sustainability. Employees who engage in green practices help to improve environmental performance and overall corporate effectiveness. So, we hypothesize:

**H5a:** Employee Green Behavior is crucial in mediating the relationship between Green Recruitment and Selection and Sustainable Organizational Performance.

**H5b:** Employee Green Behavior is crucial in mediating the relationship between Green Training and Development and Sustainable Organizational Performance.

**H5c:** Employee green behavior is important in mediating the relationship between green compensation and benefits and long-term organizational performance.

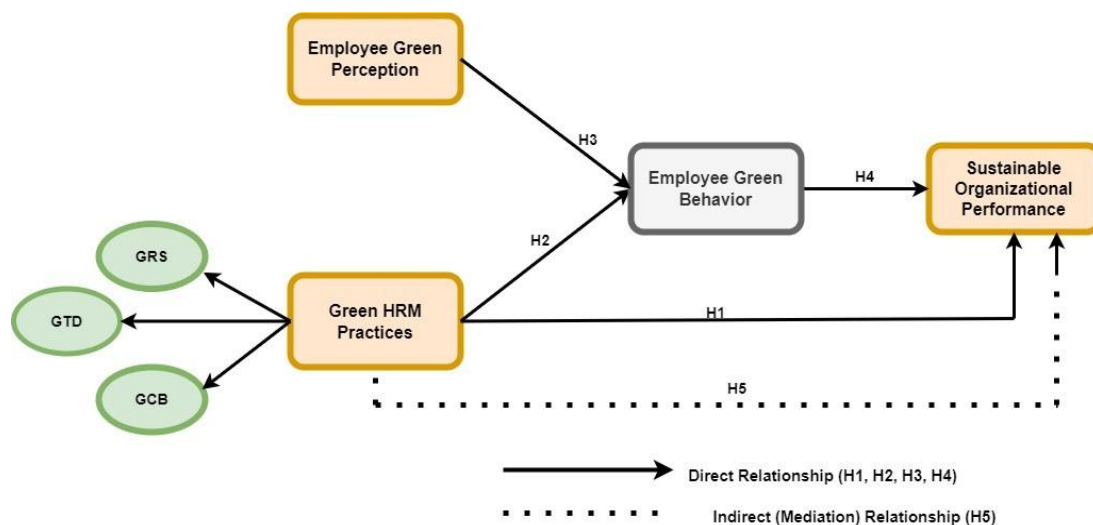


Figure 1. Conceptual framework

4. Methodologies

4.1 Research Design

This study used a descriptive research strategy, namely a survey research approach, to evaluate the correlations between different dimensions. According to Asenahabi (2019), a research design acts as a road map for moving from study objectives and questions to conclusions. The study took a quantitative approach, using a standardized

questionnaire with closed-ended questions to aid in the methodical data collection and analysis. Quantitative approaches are necessary for conducting rigorous investigations of phenomena using measurable data and statistical tools, which aligns with the study's goal of testing ideas and elucidating findings.

#### *4.2 Measurement of Variables*

The variables were measured using a structured questionnaire to assess four main constructs. Green HRM Practices were evaluated through nine items, with three items each for Green Recruitment and Selection (GRS), Green Training and Development (GTD), and Green Compensation and Benefits (GCB). These items were adapted from Marrucci et al., (2021). Green Employee Perception was measured using five items based on the framework developed Garavan et al., (2023). Employee Green Behavior was assessed through five items created by Aboramadan, (2022), while Sustainable Organizational Performance was evaluated using six items from Mousa and Othman (2020). To guarantee uniformity and comparability, all items were assessed on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

#### *4.3 Study Area*

The study was done in Ghana's Greater Accra Region, focusing on ten manufacturing and service enterprises in the Accra and Tema metropolises. Because of its importance in trade and industry, Ghana's most densely inhabited and economically active region provides an appropriate framework for investigating Green HRM practices (Ghana Statistical Service, 2021). The survey comprised enterprises in the Association of Ghana Industries, highlighting the region's diverse economic landscape.

#### *4.4 Data Collection Procedure and Instruments*

A standardized questionnaire was used to obtain primary data administered online. The questionnaire is broken into five sections: Section A collected demographic data; Sections B and C addressed the independent variables, Green HRM Practices and Green Employee Perception; Section D investigated the mediating variable, Employee Green Behavior; and Section E looked at the dependent variable, Sustainable Organizational Performance. The questionnaire's organized style made administration easier while minimizing interviewer bias. Before data collection, institutional authorities approved, and participants provided informed consent. A research assistant helped collect data, and respondents were reached via an internet-based survey link.

#### *4.5 Sampling Size and Sampling Technique*

A simple random sample procedure was used to pick participants, ensuring everyone had an equal chance of being included in the study (Ahakwa, Yang, Agba Tackie, & Asamany, 2021). The sample included 500 human resource managers and employees from ten organizations. Data were collected from 361 individuals, and 350 replies were declared legitimate, yielding a response rate of 77.77%. This sample size improves the reliability and generalizability of the study results. Before data collection, ethical approval was acquired from the authorities of the selected firms. Participants were given thorough information about the study's objectives and asked to express informed consent. The confidentiality of participant data was scrupulously upheld throughout the investigation.

#### *4.6 Data Processing and Analysis*

Data were initially structured in an Excel file to facilitate transfer to analytical tools. Descriptive statistics were calculated with the Statistical Package for Social Sciences (SPSS). The components' reliability and validity were tested using a variety of metrics, including outer loadings, average variance extracted (AVE), Cronbach Alpha (CA), and composite reliability (CR). The measurement model's validity was further investigated using the Heterotrait-Monotrait Ratio (HTMT) and the Fornell-Larcker Criterion, while collinearity was assessed using the Variance Inflation Factor (VIF).

Structural Equation Modeling (SEM) was used for hypothesis testing with a 5000-resample bootstrapping approach to determine path coefficients, effect sizes, and t-statistics (Hair et al., 2020). Furthermore, PLSpredict was utilized to determine the predictive significance (Shmueli et al., 2019). A pre-test conducted in a similar company proved the instruments' validity and reliability, which met the minimum levels set by Hair et al., (2020)

### **5. Data Analysis and Results**

This section offers the research findings on demographic characteristics, followed by an evaluation of the model, hypothesis testing, and predictive model relevance.

#### *5.1 Demographic Characteristics*

Respondent demographic characteristics are extremely important in any research project, especially when it

comes to making advancements and finding solutions to particular problems (Ahakwa, Yang, Agba Tackie, Afotey Odai, et al., 2021), which ultimately determines the nature and strategy of addressing a condition. Therefore, the demographics of every research cannot be ignored due to its importance. The study involved 350 workers in Ghana's manufacturing and service industries. A sample size of 500 participants was the aim of the study, and 350 of them completed and returned the questionnaires. A response rate of 77.77% was recorded from 350 filled questionnaires. The use of gender-specific language in this context is deemed empirical because it accurately represents the gender distribution of the study population. The study found that 52.9% of the participants were men and 47.1% were women. See Table 5.1 for more information. Of the participants, 35.1% were aged 40 to 49, 34.3% were aged 30-39, 20.6% were aged 20 to 29, and just 10% were 50 or older.

Most participants were highly educated, with 37.1% having a graduate degree, 29.7% having an undergraduate degree, and 14% holding a doctorate. Only 7% of the population had various types of education, and only 12% had a high school diploma. Most participants (50.6%) worked in manufacturing, while the remaining participants (49.5%) were employed in the service sector. The study's participants had varying levels of job experience: 28.9% had worked for 1-5 years, 31.7% for 6-10 years, 21.1% for 11-15 years, 10.6% for 16-20 years, and 7.7% for 20 years or more.

While the sample organizations' workforce sizes varied, most employed between 151-200 and 200 or more people, accounting for 22.6% and 22.9% of the sample, respectively. 15.1% of the studied organizations had 1-50 employees, while 19.7% had 51-100 and 101-150 employees, respectively. Furthermore, 34% of the companies in the sample had outstanding environmental practices, 29.1% had excellent environmental practices, and 17.4% had mediocre environmental practices. Only 13.4% and 6% of respondents reported bad or extremely poor environmental practices, respectively.

Table 5.1. Demographic Characteristics

<b>Variables</b>	<b>Item</b>	<b>Percentage (%)</b>
<b>Gender</b>	Male	52.9%
	Female	47.1%
<b>Age</b>	20-29 years	20.6%
	30-39 years	34.3%
	40-49 years	35.1%
	50 years and above	10%
<b>Educational Qualification</b>	High School	12%
	Undergraduate	29.7%
	Masters	37.1%
	PhD	14%
	Others	7.1%
<b>Industry Type</b>	Manufacturing	50.6%
	Service	49.4%
<b>Length of Service</b>	1-5 years	28.9%
	6-10 years	31.7%
	11-15 years	21.1%
	16-20 years	10.6%
	20 years and above	7.7%
<b>Organizational Size</b>	1-50	15.1%
	51-100	19.7%
	101-150	19.7%
	151-200	22.6%
	200 and above	22.9%
<b>Degree of Environmental Practices</b>	Very poor	6%
	Poor	13.4%
	Average	17.4%
	Good	34%
	Very Good	29.1%

### 5.2 Measurement Model Assessment

The reliability of the measurement model was examined first, followed by the convergent and discriminant validity. Convergent and discriminant validity of constructs can be used to measure validity, and internal

consistency of items can be used to measure reliability. The evaluation of convergent validity yields correlational measures that show the degree of agreement between several indicators of the same construct. There are strong relationships between the constructs of interest and their indicators compared to other constructs and their indicators, as guaranteed by the discriminant validity.

Table 5.2 summarizes the measurement model's reliability results. Cronbach's alpha and composite reliability (CR) values are higher than the threshold, suggesting strong construct reliability across all factors. Table 5.2 also shows that we then use the average variance extracted (AVE) to assess the convergent validity. Every value exceeded the 0.5 threshold, confirming the convergent validity.

A measurement construct demonstrates discriminant validity when it is empirically distinct and captures unique phenomena not explained by other measures within the structural equation model. Fornell-Larcker criterion states that discriminant validity can be established when a construct's square root of AVE is higher than its correlation with all other constructs (Fornell & Larcker, 1981). Table 5.3 indicates that each diagonal value exceeds its corresponding correlation coefficient, proving that discriminant validity has been achieved.

Table 5.2. Reliability and Convergent Validity

	<b>Cronbach's alpha &gt;0.7</b>	<b>CR &gt; 0.7</b>	<b>AVE &gt; 0.5</b>
GRS	0.782	0.871	0.692
GTD	0.749	0.856	0.665
GCB	0.721	0.840	0.637
EGP	0.791	0.852	0.536
GEB	0.768	0.842	0.516
SOP	0.873	0.904	0.611

Table 5.3. Fornell-Larcker's Discriminant Validity

	<b>EGP</b>	<b>GCB</b>	<b>GEB</b>	<b>GRS</b>	<b>GTD</b>	<b>SOP</b>
<b>EGP</b>	<b>0.732</b>					
<b>GCB</b>	-0.073	<b>0.798</b>				
<b>GEB</b>	-0.116	0.206	<b>0.719</b>			
<b>GRS</b>	-0.016	0.316	0.327	<b>0.832</b>		
<b>GTD</b>	-0.055	0.361	0.319	0.376	<b>0.815</b>	
<b>SOP</b>	-0.039	0.131	0.346	0.202	0.135	<b>0.782</b>

### 5.3 Structural Model Assessment

The structural model was examined following the measurement model to determine the links between the research constructs and their statistical significance. This section describes the direct and indirect relationships tested in the model.

#### 5.3.1 Direct Relationships

H1 investigates the impact of Green Human Resource Management (GHRM) practices on Sustainable Organizational Performance. GHRM practices are divided into three categories: Green Recruitment and Selection (GRS), Green Training and Development (GTD), and Green Compensation and Benefits (GCB). The results show that GRS significantly influences Sustainable Organizational Performance ( $\beta = 0.226, t = 3.492, p < 0.000$ ), supporting H1a. Similarly, GTD significantly positively affects Sustainable Organizational Performance ( $\beta = 0.211, t = 3.409, p < 0.001$ ), supporting H1b. However, GCB does not significantly impact Sustainable Organizational Performance ( $\beta = 0.048, t = 0.855, p > 0.05$ ). Thus, H1c is not supported (Table 5.4).

H2 examines whether GHRM practices positively affect Employee Green Behavior. The findings reveal that GRS positively impacts Employee Green Behavior ( $\beta = 0.231, t = 3.657, p < 0.001$ ), supporting H2a. GTD also positively affects Employee Green Behavior ( $\beta = 0.208, t = 3.372, p < 0.001$ ), supporting H2b. However, GCB does not significantly affect Employee Green Behavior ( $\beta = 0.051, t = 0.864, p > 0.05$ ), leading to the rejection

of H2c (Table 5.4).

H3 assesses the effect of Employee Green Perception on Employee Green Behavior. The analysis indicates that Employee Green Perception significantly affects Employee Green Behavior ( $\beta = -0.097$ ,  $t = 2.270$ ,  $p < 0.05$ ), supporting H3 (Table 5.4).

H4 evaluates whether Employee Green Behavior influences Sustainable Organizational Performance. The results show that Employee Green Behavior has a significant positive impact on Sustainable Organizational Performance ( $\beta = 0.346$ ,  $t = 6.186$ ,  $p < 0.001$ ), thus supporting H4 (Table 5.4).

Table 5.4. Direct Relationship

	Path	Mean(M)	Std	T Statistic	P Values	Decision	
H1a	GRS → SOP	0.226	0.226	0.065	3.492	0.000	Supported
H1b	GTD → SOP	0.211	0.214	0.062	3.409	0.001	Supported
H1c	GCB → SOP	0.048	0.052	0.056	0.855	0.393	Not Supported
H2a	GRS → EGB	0.231	0.231	0.063	3.657	0.000	Supported
H2b	GTD → EGB	0.208	0.211	0.062	3.372	0.001	Supported
H2c	GCB → EGB	0.051	0.055	0.059	0.864	0.387	Not Supported
H3	EGP → EGB	-0.097	-0.113	0.043	2.270	0.023	Supported
H4	EGB → SOP	0.346	0.354	0.056	6.186	0.000	Supported

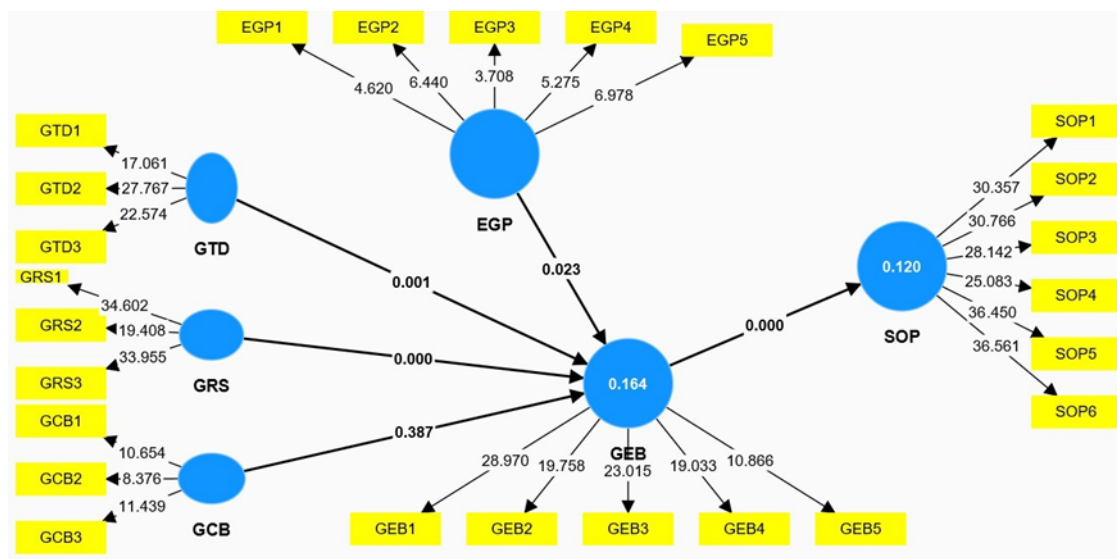


Figure 4.1. Structural model

### 5.3.2 Indirect Relationships

H5 explores the mediating role of Employee Green Behavior in the relationship between GHRM practices and Sustainable Organizational Performance. The results reveal that Employee Green Behavior significantly mediates the relationship between Green Recruitment and Selection and Sustainable Organizational Performance ( $\beta = 0.080$ ,  $t = 3.140$ ,  $p < 0.01$ ), supporting H5a with partial mediation. Similarly, Employee Green Behavior significantly mediates the relationship between Green Training and Development and Sustainable Organizational Performance ( $\beta = 0.072$ ,  $t = 2.911$ ,  $p < 0.01$ ), supporting H5b with partial mediation. However, Employee Green Behavior does not mediate the relationship between Green Compensation and Benefits and Sustainable Organizational Performance ( $\beta = 0.018$ ,  $t = 0.812$ ,  $p > 0.05$ ), resulting in the rejection of H5c with no mediation (Table 5.5).

Table 5.5. Indirect relationship

	Path	Mean(M)	Std	T Statistic	P Values	Decision	
H5a	GRS → EGB → SOP	0.080	0.082	0.025	3.140	0.002	Supported
H5b	GTD → SOP	0.072	0.074	0.025	2.911	0.004	Supported
H5c	GCB → SOP	0.018	0.020	0.022	0.812	0.417	Not Supported

### 5.4 Model Predictive Relevance

Chin Wynne W. et al. (2008) Argue that the predictive significance of the model is successfully demonstrated if the  $Q^2$  statistics, which is the predictive sample reuse technique, is assessed in conjunction with both  $R^2$  and  $f^2$



#### 5.4.1 Effect Size ( $f^2$ )

F-square measures how the  $R^2$  changes when an exogenous variable is removed from the model. (Cohen, 1988) established the following guidelines for effect size ( $f^2$ ): small effects at 0.02, medium effects at 0.15, and large effects at 0.35. According to Table 5.6, there were medium effects in every direct relationship.

Table 5.6. Effect size

	<b>f-square</b>	<b>Effect size</b>
EGP → EGB	0.011	small
GCB → EGB	0.003	small
EGB → SOP	0.136	small
GRS → EGB	0.052	small
GTD → EGB	0.041	small

#### 5.4.2 R-square ( $R^2$ )

$R^2$  explains the in-sample prediction in each endogenous construct, also known as the coefficient of determination (Hair et al., 2020). It indicates how one or multiple independent variables can explain the dependent variable. Falk & Miller, (1992) recommended that for the variance explained by a specific endogenous construct to be considered sufficient, its  $R^2$  values should be at least 0.10.

Table 4.4 shows that the overall variation of 16.4% among GRS, GTD, and GCB in EGB is explained by an  $R^2$  of 0.164, and the overall variation of 12% in EGB in SOP is explained by an  $R^2$  of 0.120. These values are considered adequate as they are more significant than the referenced threshold value of 0.10, suggested by Falk & Miller, (1992)

#### 5.4.3 Q-square

Chin Wynne W. et al., (2008), posit that the predictive relevance of a model can be assessed by the  $Q^2$  statistic, which indicates whether the model has predictive relevance. According to Chin Wynne W. et al., (2008), a model is considered to have high predictive power if the value of  $Q^2$  exceeds zero. On the other hand, a  $Q^2$  value below zero indicates that the study's model lacks predictive relevance. Table 5.7 shows  $Q^2$  values of 0.125 and 0.033 suggest that the research model has predictive significance.

Table 5.7. Predictive Relevance

	<b>R-square</b>	<b>R-square adjusted</b>	<b>Q- square</b>
<b>EGB</b>	0.164	0.154	0.125
<b>SOP</b>	0.120	0.117	0.033

#### 5.4.4 MV Predictive Summary (PLS predict)

Researchers often use the  $R^2$  statistic to assess the predictive power of their models (Sarstedt & Danks, 2021) However, since the  $R^2$  statistic only shows the model's in-sample explanatory power; it cannot comment on its out-of-sample predictive power (Sarstedt et al., 2021). The term "in-sample" describes data you already have, whereas "out-of-sample" describes data you wish to forecast or estimate but do not currently have. As a result, out-of-sample predictive power shows how well a model can forecast new or future observations. Consequently, Shmueli Galit et al., (2016) presented PLS predict, an out-of-sample prediction method.

The  $Q^2$  predict values of PLS-SEM are initially assessed per the recommendations made by Shmueli et al., (2019) When the  $Q^2$  values are more than zero, PLS predict shows an extremely symmetrical distribution in prediction errors. As noted by Shmueli et al., (2019) Table 4.6 shows that the  $Q^2$  predict values are higher than zero, demonstrating that the LM-RMSE and PLS-RMSE numbers should be juxtaposed. As demonstrated in Table 5.8, upon comparison, the PLS-SEM study yielded a lower forecast error for every indicator compared to LM-RMSE regarding the PLS-RMSE model estimation. Therefore, the model's high predictive power is evident from the adverse figures in Table 5.8 after deducting PLS-RMSE values from LM-RMSE values.

Table 5.8. PLS Assessment of Manifest Variable (Original Model)

	$Q^2$ predict	PLS-RMSE	LM-RMSE	(PLS-RMSE) -(LM-RMSE)
EGB1	0.122	0.803	0.824	-0.021
EGB2	0.080	0.869	0.882	-0.013
EGB3	0.066	0.896	0.917	-0.021
EGB4	0.044	0.910	0.922	-0.012
EGB5	0.011	1.054	1.061	-0.007
SOP1	0.023	0.966	0.994	-0.028
SOP2	0.039	1.028	1.028	0.000
SOP3	0.009	1.118	1.148	-0.030
SOP4	0.007	1.080	1.119	-0.039
SOP5	0.018	1.145	1.157	-0.012
SOP6	0.025	1.066	1.092	-0.026

## 6. Discussion of Findings

### 6.1 Discussion

This study examined how GHRM practices and employee green perceptions influence employee green behavior to enhance sustainable organizational performance in Ghana's manufacturing and service sectors. The findings indicate that sustainable organizational performance positively correlates with GHRM practices, specifically green recruitment and selection and green training and development, mediated by employee green behavior. Employee green perception also significantly impacts employee green behavior.

The analysis revealed that green training and development and green recruitment and selection significantly and positively impact sustainable organizational performance. This supports the idea that GHRM practices can cultivate environmentally conscious workers and disseminate ecological principles, thereby aiding business sustainability (Yong et al., 2020). These results align with previous research, suggesting that organizations prioritizing green recruitment and training can improve sustainable performance.

Green recruitment and selection showed a significant positive relationship with sustainable organizational performance, supporting H1a. This indicates that organizations prioritizing environmentally conscious applicants during recruitment can enhance sustainability. This aligns with the research by (Masri & Jaaron, 2017; Mousa & Othman, 2020) Employers can leverage green recruitment and selection strategies to draw in top-tier applicants as these applicants are more inclined to lessen dangers to the public and the environment. These results are consistent with the ideas presented by (Ahmad, 2015; Kim et al., 2019; Shahzad et al., 2023). Similarly, green training and development were significantly correlated with sustainable performance, supporting H1b. Companies investing in green training can improve employee ecological awareness and inspire sustainable practices, thus enhancing overall performance. The findings align with the concepts put forth by (Ali et al., 2024; Luo et al., 2024; Yong, Yusliza, Ramayah, et al., 2020)

However, green compensation and benefits did not significantly correlate with sustainable organizational performance (H1c not supported). This may be due to the lack of emphasis on green compensation in Ghanaian firms, although previous studies suggest a significant relationship (Amjad et al., 2021; Marrucci et al., 2021). This outcome aligns with the findings by (Yong, Yusliza, Ramayah, et al., 2020)

Green recruitment and selection also significantly influenced employee green behavior, supporting H2a. This highlights the importance of recruiting environmentally conscious individuals to promote the company's green initiatives (Shahzad et al., 2023). Green training and development significantly impacted employee green behavior, supporting H2b and suggesting that investment in green training can foster pro-environmental behavior among employees. The findings align with the concepts put forth by (Albrecht et al., 2015; Amjad et al., 2021; Tirno et al., 2023).

Conversely, green compensation and benefits did not significantly correlate with employee green behavior (H2c not supported). This could be because Ghanaian firms do not effectively use green compensation to incentivize environmental practices (Amjad et al., 2021; Marrucci et al., 2021)

Employee green behavior impacted sustainable organizational performance, significantly supporting H4. This indicates that employees who engage in sustainable practices can enhance organizational performance by improving efficiency and reducing environmental impact. The results support the claims of (Amjad et al., 2021; Shahzad et al., 2023).

Interestingly, employee green perception showed a significant but negative correlation with employee green behavior, supporting H3. This negative interaction suggests that if employees feel their efforts are unrecognized or face obstacles in implementing green practices, their engagement in such behaviors may decrease. This result

contrasts with views expressed by Garavan et al., (2023); Shen et al., (2018). Companies should implement environmental management systems that include employee participation and perception to encourage high levels of environmentally conscious behavior.

Employee green behavior significantly mediates the relationship between green HRM practices (such as green recruitment and selection, green training and development) and sustainable organizational performance, supporting H5a and H5b. However, employee green behavior does not significantly mediate the relationship between green compensation and benefits and sustainable organizational performance; hence, H5c is unsupported. The results reinforce earlier studies showing that active participation and eco-friendly behavior support positive behavior toward energy, water, and material conservation to enhance sustainable organizational performance. The limited emphasis placed by companies in the manufacturing and service sectors on utilizing green benefits and compensation to motivate employees to embrace environmentally conscious behaviors may account for the nonsignificant mediation relationship observed.

## **7. Conclusion**

### *7.1 Theoretical Implications*

This study greatly contributes to understanding sustainability in Ghana's manufacturing and service sectors. It also contributes to the literature on Green Human Resource Management (GHRM) practices and employee green perception by illustrating how these factors might enhance corporate sustainability through employee behavior.

The study combines environmental and human resource management theories, emphasizing the mutual benefits of matching HRM practices with environmental sustainability goals. It emphasizes the importance of psychological elements such as attitudes and motivations in influencing eco-friendly behaviors and the need to consider employee perceptions in environmental management research and practice. The study demonstrates that boosting green behavior among employees can improve organizational sustainability by demonstrating how it mediates the association between GHRM practices and long-term organizational performance. Furthermore, by focusing on Ghanaian enterprises, the study provides useful contextual insights for tailoring theoretical frameworks to emerging countries' distinct socioeconomic and cultural settings.

### *7.2 Practical Implications*

The study has numerous practical consequences for managers, supervisors, business professionals, and policymakers. Managers should foster a culture that values and encourages sustainability, demonstrating a commitment to eco-friendly operations and incorporating environmental principles into corporate culture. Identifying and removing barriers that impede employees from adopting green practices is critical. Surveys, focus groups, and feedback systems can help understand and manage these challenges. Effective communication techniques are required to connect employee views with green activities, supported by frequent awareness campaigns and explicit communication of sustainability goals.

Supervisors must ensure that employees have access to the resources, equipment, and tools they need to engage in environmentally friendly activities, such as investing in green technologies and offering recycling services. The report also emphasizes the Ghanaian government's involvement in encouraging enterprises to embrace green HRM practices by providing strategic guidance, incentives, and environmental training. These practical guidelines aim to assist firms in integrating GHRM principles, improving sustainable performance, and leveraging employee behavior and perceptions to increase environmental impact.

### *7.3 Limitations of Study*

The study's generalizability is constrained as it focuses solely on one of Ghana's sixteen regions within the manufacturing and service sectors. Future research could replicate this study using a larger sample size across multiple regions to enhance applicability to broader populations. The study's short timeframe may not adequately capture long-term outcomes or changes. Further research could explore other potential mediators of sustainability performance that were beyond the scope of this study.

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## **Authors' contributions**

MAA and SO were responsible for the study design and revising. NAB was responsible for data collection. EL drafted the manuscript, and BAO revised it. All authors read and approved the final manuscript. All authors contributed equally to the study.

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**Data sharing statement**

No additional data are available.

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