

Green Human Resource Management and Environmental Performance: The Mediating Role of Green Supply Chain Management

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Abstract

Green human resource management, or GHRM, has become a key organizational strategy for integrating environmental sustainability into HR procedures. The processes by which GHRM improves environmental performance, however, require further empirical investigation. The present study investigates the mediating function of Green Supply Chain Management (GSCM) in the relationship between GHRM and environmental performance. The suggested study design is cross-sectional and quantitative. A structured questionnaire using a five-point Likert scale may be used to gather information from management and staff of manufacturing organizations operating in Hyderabad Pakistan. The sample of roughly 250–300 respondents can be subjected to Structural Equation Modeling analysis using Smart PLS. The suggested model examines how GHRM directly affects GSCM and environmental performance as well as how GHRM indirectly affects environmental performance through GSCM. The anticipated outcomes include GHRM's beneficial effects on GSCM and environmental performance as well as GSCM's important mediating function in the relationship between GHRM and environmental performance.

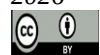
Keywords: Green Human Resource Management, Green Supply Chain Management, Environmental Performance, Sustainability, Green Training, Green Performance Management, PLS-SEM.

Introduction

As businesses are challenged to reduce waste, save energy, manage pollution, and use resources more effectively, environmental sustainability has grown in importance. Environmental management has always been primarily an operational and technological strategy. However, managers and staff play a crucial role in putting environmental initiatives into practice. As a result, the idea of Green Human Resource Management (GHRM) has increased the connection between HRM and environmental sustainability. These three conditions are closely associated with GHRM.

Environmental competence and expertise are developed through green hiring and training. By indicating that environmental contribution is appreciated, performance management, recognition, and awards can improve motivation. Opportunities to apply information and provide solutions are provided by employee participation, recommendation systems, cooperation, and involvement

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in environmental decision-making (Nawaz et al., 2026). The integration of environmental objectives into human resource policies and procedures is known as GHRM. Green hiring and selection, green training, green performance management, green incentives, employee engagement, and an ecologically conscious corporate culture are a few examples, Renwick, Redman, & Maguire (2013).

Green supply chain management (GSCM) is another important field. Environmental concerns in procurement, manufacturing, shipping, distribution, supplier management, and other supply chain operations are all included in GSCM. GHRM may provide workers with the skills and drive required to carry out these procedures successfully.

In order to investigate the direct and indirect effects of GHRM on environmental performance through GSCM, the current study offers a thorough model.

Research Objectives

To examine the effect of GHRM on GSCM.

To examine the effect of GHRM on environmental performance.

To examine the effect of GSCM on environmental performance.

To examine the mediating role of GSCM between GHRM and environmental performance.

Research Gap

Previous studies have shown the importance of Green Human Resource Management (GHRM) for environmental and sustainable results but there are still some research gaps.

GHRM and GSCM Integration

GHRM and Green Supply Chain Management (GSCM) are generally considered as related, but separate fields. The importance of linking the two research areas has been discussed by Jabbour and de Sousa Jabbour (2016). Similarly, Zaid, Jaaron and Bon (2018) studied the combined influence of GHRM and GSCM on sustainable performance. However, more empirical work is needed to understand the role of HR practices in facilitating the implementation of green supply-chain activities by employees and improving organizational performance.

Evidence from Developing Countries: Sparse

More research is needed in developing-country settings, and there is much opportunity." Organizations in developing economies may have different institutional, financial, technological and environmental obstacles in comparison with organizations in developed economies. Further evidence can also be provided from countries like Pakistan as to whether GHRM and GSCM lead to similar outcomes in different institutional environments. The present study suggests to collect evidence from the organizations working in Pakistan specifically.

Testing of Mediating Mechanisms

Previous studies have established relationships between GHRM, GSCM and environmental performance. However, the understanding of how these relationships happen is still missing. For instance, Saeed et al. (2022) examined the role of GSCM practices in the relationship between GHRM and environmental performance. Future research can further explore other mechanisms such as green employee behavior, green innovation and green organizational culture. This study fills the gap by investigating GSCM as a mediator.

Gap in Financial Performance

Much of the GHRM literature is concerned with environmental or sustainability outcomes. However, it is important for organizations to know whether green HR practices have an effect on financial performance. Therefore, future research can examine the effect of GHRM and GSCM on environmental performance and financial performance simultaneously. This would provide a more complete picture of the organizational benefits of green management.

Literature Review

Green Human Resource Management (GHRM)

The integration of environmental sustainability into HRM operations is known as GHRM. It promotes hiring environmentally conscious workers, offering environmental training, including environmental goals into performance evaluations, and rewarding staff members for their eco-friendly actions.

Strong green policies are usually associated with increased sales and brand recognition for companies (Wee & Quazi, 2005; Yang, Hong, & Modi, 2011). As organizational green policies are carried out by employees, organizations need to encourage and eventually change employee behavior to be in line with company green goals (Daily, Bishop & Govindarajulu, 2009; Ones & Dilchert, 2012; Ramus & Steger, 2000). Organizations are increasingly adopting green human resource management (green HRM) practices, often referred to as “HRM aspects of green management” (Renwick, Redman, & Maguire, 2013), to promote sustainable behaviors of employees at work. Kramar (2014) describes green HRM as ‘HRM activities, which enhance positive environmental outcomes’ (p. 1075).

GSCM, or green supply chain management

Supply chain management (SCM) is the integration and coordination of business activities and the alignment of strategies in the supply chain to satisfy the needs of the final consumers (Green et al., 2007, 2012; Cohen & Roussel, 2005; Ho et al., 2002). Examples of integrated business operations which should be coordinated to allow the effective flow of goods, information and materials among supply-chain participants are purchasing, manufacturing, marketing, logistics and information systems. Also, it is important to harmonize the main strategic priorities across the supply chain such as customer focus, efficiency, quality and responsiveness (Zelbst et al, 2010). In recent years, environmental sustainability has become a key strategic factor in supply chain management (SCM), as there has been increasing pressure on businesses to deal with

environmental effects in their supply-chain operations. As competition intensifies at the supply-chain level and businesses respond to changing consumer expectations, supply-chain partners must develop collaborative strategies that can create competitive advantage and improve overall supply-chain performance (Green et al., 2008). Green Supply Chain Management (GSCM) has gained more importance due to the integration of environmental objectives into supply-chain activities.

GSCM expands environmental management to include suppliers, purchasing, production, transportation, distribution, and customers in addition to internal organizational boundaries. Green purchasing, ecologically conscious suppliers, eco-friendly manufacturing, reverse logistics, waste minimization, recycling, and green transportation are a few examples.

Environmental Performance

The degree to which a company improves environmental outcomes is measured by its environmental performance. This can include improvements in recycling and resource efficiency as well as decreases in waste, energy, water, pollution, and toxic emissions.

GSCM and GHRM

GHRM improves workers' motivation and environmental skills, which can facilitate the adoption of ecologically friendly supply-chain practices. Organizations can train staff members on sustainable logistics, waste reduction, and environmentally friendly purchasing through green training.

Environmental Performance and GHRM

GHRM can influence environmental performance by encouraging employees to act in an environmentally conscious manner. Green hiring can bring in eco-aware workers, and green training can improve workers' awareness of the environment. Environmental goals can be accomplished with the use of green performance management and incentives.

Environmental Performance and GSCM

GSCM directly incorporates environmental objectives into supply-chain management. Environmentally friendly production, recycling, green logistics, green purchasing, and environmental cooperation with suppliers can all lessen the effects on the environment.

In addition to having a direct impact on environmental performance

GHRM's mediating function may help GSCM be implemented. Employees can assist companies in implementing environmental practices in the supply chain if they possess the necessary green knowledge, skills, and drive.

Hypotheses

H1: Green Human Resource Management has a positive and significant effect on Green Supply Chain Management.

H2: Green Human Resource Management has a positive and significant effect on Environmental Performance.

H3: Green Supply Chain Management has a positive and significant effect on Environmental Performance.

H4: Green Supply Chain Management significantly mediates the relationship between Green Human Resource Management and Environmental Performance.

Theoretical Framework and Conceptual Model

The proposed model can be supported by the Resource-Based View (RBV) and Ability-Motivation-Opportunity (AMO) theory. The RBV emphasizes organizational resources and capabilities, while AMO theory explains how employees' ability, motivation and opportunity can influence performance.

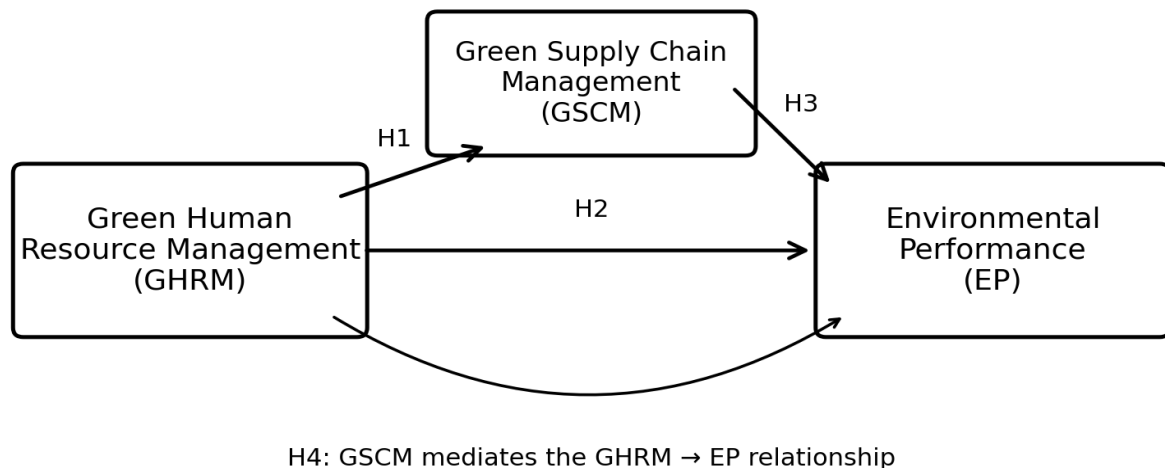


Figure 1. Proposed conceptual framework and hypotheses.

Model Specification

Direct-effect model: $EP = \beta_0 + \beta_1(GHRM) + \beta_2(GSCM) + \varepsilon$

Mediation path: $GHRM \rightarrow GSCM \rightarrow EP$

The model tests whether GSCM transmits part of the effect of GHRM on environmental performance.

Methodology

Research Design

The study adopts a quantitative and cross-sectional research design. Primary data are collected through a structured questionnaire.

This design help in order to collect the data to make a specific conclusion about the population of the going study at one particular time period. It is all about the collection of data of the population. This study might be repeated for several time in order to collect the main and basic information for the research.

Population and Sampling

The intended audience is managers and employees of supply-chain, manufacturing, and logistics companies who have implemented or are currently working on implementing environmental management techniques. Purposeful sampling will be used, since respondents must be sufficiently informed on the environmental and human resource management procedures of their firm. We suggest a first goal of 250–300 responders. An a priori statistical power analysis will be conducted to determine the final minimal sample size, based on the number of predictors, expected effect size, significance level, desired statistical power, and complexity of the proposed structural model.

Data Analysis Plan

Data screening and treatment of missing values.

Descriptive statistics for respondent characteristics and study variables.

Reliability analysis using Cronbach's alpha and Composite Reliability (CR).

Convergent validity using Average Variance Extracted (AVE).

Discriminant validity using Fornell-Larcker and HTMT.

Correlation analysis.

Assessment of the structural model using path coefficients, t-values, p-values and R^2 .

Bootstrapping for direct and indirect effects.

Mediation analysis to determine whether GSCM transmits the effect of GHRM on environmental performance.

Illustrative Data Analysis and Results

Note: The numerical values in this section are hypothetical examples for demonstrating how the results section can be written. They must be replaced with actual results after data collection and analysis.

Table 1: Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
GHRM	0.91	0.93	0.66
GSCM	0.89	0.92	0.67
Environmental Performance	0.88	0.91	0.63

The hypothetical results indicate acceptable internal consistency because all reliability values exceed commonly used thresholds and the AVE values are above 0.50.

Table 2: Correlation Matrix

Variable	GHRM	GSCM	EP
GHRM	1.00	0.62	0.55
GSCM	0.62	1.00	0.67
EP	0.55	0.67	1.00

Table 3: Structural Model and Hypothesis Testing

Relationship	B	t-value	p-value	Decision	Hypothesis
GHRM → GSCM	0.62	10.21	<0.001	Supported	H1
GHRM → EP	0.28	4.51	<0.001	Supported	H2
GSCM → EP	0.49	7.83	<0.001	Supported	H3
GHRM → GSCM → EP	0.30	6.20	<0.001	Supported	H4

In the illustrative model, the direct GHRM → EP relationship remains significant while the indirect effect through GSCM is also significant. This pattern would be interpreted as partial mediation if it is confirmed by the actual bootstrapping results.

Discussion

The suggested findings suggest that organizations can enhance environmental outcomes by integrating environmental objectives into HRM systems. The positive GHRM-GSCM relationship suggests that employees' knowledge, skills and motivation in the environmental area may contribute to green supply-chain activities. GHRM may also have a direct relationship with environmental performance as employees are important actors in the implementation of environmental policies. Environmental issues are embedded in the purchasing, production,

logistics, and supplier relationships. So GSCM can directly influence environmental performance. The mediating relationship indicates that GHRM can impact environmental outcomes via organizational supply-chain practices.

Future Directions

Based on the identified gaps, future researchers can develop several extended models.

Model 1: GHRM GSCM Financial performance This model can test the mediating role of Green Supply Chain Management in the relationship between GHRM and financial performance. The study may investigate whether the investment in green recruitment, training, performance management and rewards improves financial performance through better purchasing, logistics, waste management and supplier relations. This direction would build upon existing research, which has focused primarily on environmental outcomes.

Model 2: GHRM → Green Financial Management → Environmental Performance Future research can examine Green Financial Management as a mediator between GHRM and environmental performance. Organizations require financial resources to execute environmental initiatives. This enables investigators to assess whether good green financial planning and investment can be used to transform green HR practices into real environmental improvements.

Model 3: GHRM → Green Employee Behavior → Environmental Performance This model concentrates on the employee level mechanism. GHRM can provide environmental knowledge, motivation and opportunity for employees to participate in environmental activities. Future research can explore whether these practices lead employees to save energy, reduce waste, recycle materials and use organizational resources responsibly, which eventually enhances environmental performance.

Model 4: GHRM → GSCM → Sustainability Performance Future research can enrich the present environmental-performance model by adopting sustainable performance as a multidimensional dependent variable. Sustainable performance may include environmental, social and economic dimensions. Zaid et al. (2018) offers relevant empirical support for the examination of the combined relationship between GHRM, GSCM and sustainable performance.

Model 5: Green performance management → Green reward system → Sustainability Another way of adding value is to focus on specific GHRM practices, rather than looking at GHRM as an overall construct. Researchers can investigate whether green performance management and green compensation incentivize employees to attain environmental objectives. For example, organizations could tie performance appraisals and rewards to energy conservation, waste reduction, recycling, and other environmental goals.

Summary

This study proposes a quantitative framework for the study of the relationship between Green Human Resource Management and Green Supply Chain Management and Environmental Performance. The model hypothesizes that GHRM positively impacts GSCM and environmental performance and GSCM mediates the relationship between GHRM and environmental

performance. The model incorporates human-resource and supply-chain perspectives of environmental sustainability and can be empirically tested with questionnaire data and PLS-SEM.

In sum, the research links the human-resource and supply-chain perspectives on environmental sustainability. It offers a framework for understanding how green HR practices can support green supply-chain activities and environmental performance. The model also provides a basis for future research to look at broader outcomes such as sustainable performance, financial performance, green innovation, and green employee behavior. However, the proposed relationships need ultimately to be evaluated by actual empirical data collected from the target organizations.

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