

Green Human Resource Management and Employee Efficiency: The Mediating Role of Employee Motivation in Emerging Small Businesses in Nanjing, China

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ABSTRACT

This study investigates the relationship between Green Human Resource Management [1] (GHRM) and employee efficiency, with a focus on the mediating role of employee motivation in emerging small businesses in Nanjing, China. Using a quantitative approach, data were collected from 357 employees through structured questionnaires and analyzed via SPSS 24.0. Results reveal that while GHRM [2, 3] positively influences employee motivation, it does not significantly mediate the relationship between GHRM and employee training participation or overall efficiency. Additionally, teamwork and training, though positively associated with GHRM, fail to mediate the GHRM-efficiency link. The study highlights the need for strategic alignment of GHRM practices with operational goals and proposes a framework (GreenEdge360) to enhance employee efficiency through integrated sustainability initiatives.

KEYWORDS

Green HRM; Employee motivation; Mediation; Small businesses; Sustainability

1. INTRODUCTION

Environmental sustainability has become a critical priority for organizations worldwide, prompting the rise of Green Human Resource Management (GHRM)—practices integrating environmental responsibility into HR functions such as training, performance management, and employee engagement (Bangura et al., 2024). While previous studies acknowledge GHRM's potential to enhance employee motivation [4, 5] and organizational performance, the mediating mechanisms, particularly in emerging markets like China, remain underexplored. This study addresses this gap by examining how employee motivation mediates the relationship between GHRM and employee efficiency in small businesses, a sector crucial to China's "dual-carbon" sustainability goals but under-researched in GHRM literature.

2. LITERATURE REVIEW

2.1. Conceptual Framework of Green HRM

Green Human Resource Management (GHRM) integrates environmental sustainability into traditional HR functions, including recruitment, training, performance management, and employee engagement. This practice aims to foster eco-friendly behaviors among employees and align organizational goals with environmental responsibility (Bangura et al., 2024). For instance, GHRM

initiatives such as green training programs and sustainability-focused performance metrics have been shown to enhance employee awareness and commitment to environmental goals (Jabbour & Jabbour, 2016). In the Chinese context, Guo (2017) emphasizes that GHRM not only promotes ecological harmony but also psychological alignment between employees and organizational green values, reflecting Confucian principles of “unity between man and nature.”

2.2. Employee Motivation and Sustainable Behavior

Employee motivation [6] serves as a critical psychological driver for translating GHRM policies into action. According to self-determination theory (Ryan & Deci, 2017), intrinsic motivation—driven by personal values and job satisfaction—plays a more significant role in sustaining eco-friendly behaviors than extrinsic rewards. For example, Khan et al. (2022) found that GHRM practices like green recognition systems enhance intrinsic motivation, leading to higher employee efficiency in SMEs. However, in emerging markets, the link between motivation and behavior is often moderated by organizational support, such as access to training and resource availability.

2.3. Mediating Mechanisms: Training, Teamwork, and Motivation

Previous studies highlight training and teamwork as potential mediators in the GHRM-efficiency relationship. Green training programs equip employees with practical skills for resource conservation (e.g., digital tool adoption), while teamwork fosters collaborative problem-solving for sustainability challenges (Kim & Kim, 2016). However, these mechanisms remain understudied in Chinese SMEs. For instance, Mohd Zaki & Norazman (2019) suggest that employee empowerment—often lacking in hierarchical cultures—may weaken the mediating effect of teamwork. Additionally, while GHRM can enhance motivation, barriers such as unclear role definitions or inadequate training relevance may prevent motivation from translating into training participation or task efficiency (Zoogah, 2021).

3. METHODOLOGY

3.1. Research Design

This study employs a quantitative cross-sectional design to test hypothesized relationships among GHRM, employee motivation, training, teamwork, and efficiency. Data were collected from SMEs in Nanjing [7], a key industrial hub in China’s Yangtze River Delta, reflecting the region’s focus on green development.

3.2. Sample and Data Collection

According to the Jiangsu Provincial Bureau of Statistics, the study population consisted of 4,900 employees across manufacturing (1,588), retail (772), and service (2,540) sectors in Nanjing. Stratified random sampling was employed to ensure sectoral representation, yielding 357 valid responses through online surveys and on-site distribution, resulting in a 7.3% response rate. Sample characteristics included 52% female and 48% male participants, with 63% aged 25–40, and sectoral distribution comprising 51% manufacturing, 16% retail, and 33% services.

3.3. Questionnaire Design and Analysis

This study utilized a quantitative approach with data collected from 357 employees in emerging small businesses in Nanjing, China, to examine the mediating role of employee motivation in the relationship between Green Human Resource Management (GHRM) and employee efficiency. Structured questionnaires adapted from validated scales were employed, including measures for GHRM commitment (10 items, $\alpha = 0.83$), employee motivation (10 items, $\alpha = 0.88$), employee

efficiency (10 items, $\alpha = 0.85$), training exposure (8 items, $\alpha = 0.86$), and teamwork (8 items, $\alpha = 0.82$), all translated and back-translated for cultural validity. Descriptive statistics and mediation regression analysis with bootstrapping (5,000 resamples) via SPSS 24.0 and Hayes' Process macro tested hypotheses that employee training/teamwork mediate the GHRM-efficiency relationship (H1) and employee motivation mediates the GHRM-training exposure relationship (H2). Results showed GHRM positively influenced employee motivation but did not significantly mediate training participation or efficiency, with training and teamwork also failing to mediate the GHRM-efficiency link. The study proposed the GreenEdge360 framework to align GHRM practices with operational goals for enhanced sustainability and efficiency.

4. RESULTS

4.1. Descriptive Findings

The composite mean score for employee efficiency was 4.46 (SD = 0.52), categorized as "average," indicating moderate alignment with eco-friendly practices. Sub-dimensions such as "effective use of digital tools" (M = 4.70) and "active contribution to green innovations" (M = 4.64) showed relatively strong performance, while "sustainable work schedule management" (M = 3.96) was rated lowest, reflecting challenges in logistical sustainability practices. Employee commitment to GHRM yielded a composite mean of 4.54 (SD = 0.48), classified as "moderate," with highest scores for "GHRM enhancing job satisfaction" (M = 4.84) and "availability of green resources" (M = 4.81), but lower scores for "daily eco-practice integration" (M = 4.23) and "participation in environmental programs" (M = 4.42). Employee motivation scored a composite mean of 4.41 (SD = 0.50), also "average," with peaks in "motivation to participate in green initiatives" (M = 4.70) and "willingness to receive eco-training" (M = 4.48), while "pride in daily green contributions" (M = 4.25) and "recognition of eco-efforts" (M = 4.25) were relatively weak.

4.2. Mediation Analysis

Testing Hypothesis 1 (mediation via training and teamwork), results showed a significant direct effect of training exposure (ETO) on employee efficiency ($\beta = 0.647$, $p < 0.001$), but the indirect effect of GHRM through ETO was nonsignificant ($\beta = 0.019$, $p = 0.54$). Teamwork (ETW) exhibited no significant direct effect on efficiency ($\beta = 0.001$, $p = 0.983$), with a nonsignificant indirect effect ($\beta = 0.0002$, $p = 0.983$). For Hypothesis 2 (motivation mediating GHRM-training exposure), GHRM significantly influenced employee motivation ($\beta = 0.548$, $p < 0.001$), but the indirect effect through motivation on training exposure was nonsignificant ($\beta = 0.011$, $p = 0.761$). Notably, GHRM had a significant negative direct effect on employee efficiency ($\beta = -0.168$, $p < 0.001$), though the total effect remained significant ($\beta = -0.146$, $p = 0.005$), suggesting complex interactions between GHRM implementation and operational efficiency.

4.3. Implications of Key Results

The nonsignificant mediation effects indicate that while GHRM enhances motivation and training availability, structural barriers (e.g., unclear roles, limited resource access) prevent these from translating into improved efficiency, aligning with Ajzen's Theory of Planned Behavior on perceived behavioral control. The negative direct effect of GHRM on efficiency may reflect misalignment between green policies and daily workflows, such as burdensome sustainability procedures. These findings highlight the need for targeted interventions to bridge policy intentions with practical implementation in emerging SMEs.

5. DISCUSSION

5.1. Key Findings and Theoretical Implications

This study reveals a critical paradox in the GHRM-employee efficiency relationship: while Green Human Resource Management (GHRM) significantly enhances employee motivation ($\beta = 0.548$, $p < 0.001$), this motivation does not translate into improved training participation or overall efficiency, contradicting assumptions in existing literature (Khan et al., 2022). The nonsignificant mediation effects of training and teamwork (H1 and H2) suggest that structural barriers, such as limited access to resources and unclear role definitions, undermine the translation of motivation into action, aligning with Ajzen's (1991) Theory of Planned Behavior on "perceived behavioral control". For instance, low scores on sustainable scheduling ($M = 3.96$) indicate employees lack the practical support needed to apply green intentions to daily tasks.

The unexpected negative direct effect of GHRM on efficiency ($\beta = -0.168$, $p < 0.001$) highlights a critical implementation gap: overly bureaucratic or misaligned green policies may be perceived as burdensome, reducing productivity. This finding challenges the assumption that GHRM inherently improves performance and underscores the need for context-specific adjustments in emerging markets like China.

5.2. Practical Implications and the GreenEdge360 Framework

To address these gaps, the study proposes the GreenEdge360 framework, a targeted intervention designed to integrate GHRM with operational realities:

Eco-Efficiency Training Modules: Modular, job-embedded training (e.g., digital tool adoption) to enhance practical green skills, addressing the "know-do" gap identified in training mediation results.

Sustainability-Driven KPIs: Linking green behaviors (e.g., paperless compliance) to performance evaluations and rewards, ensuring GHRM practices are perceived as relevant to daily work.

Cross-Functional Green Team Accelerator (GTA): Structured team challenges and interdepartmental projects to foster collaborative problem-solving, addressing the weak teamwork-mediation effect by aligning collaboration with clear sustainability goals.

Digital Green Portal: A centralized platform for resource sharing, training access, and progress tracking, reducing information barriers and enhancing engagement.

5.3. Limitations and Future Research

The study's cross-sectional design limits causal inference, and its focus on Nanjing SMEs may restrict generalizability to other regions or industries. Future research could adopt longitudinal designs to track dynamic GHRM effects or explore cultural moderators, such as Confucian values influencing employee compliance with green policies. Additionally, qualitative studies could unpack the mechanisms behind the negative GHRM-efficiency relationship, providing deeper insights into policy implementation challenges.

5.4. Conclusion

This research contributes to GHRM literature by demonstrating that employee motivation alone is insufficient to drive efficiency in emerging SMEs; successful sustainability integration requires aligned training, supportive infrastructure, and goal-oriented teamwork. The GreenEdge360 framework offers a scalable model for translating green intentions into measurable outcomes, supporting China's dual-carbon goals through practical, employee-centric HR strategies. By

prioritizing behavioral control and operational relevance, organizations can transform GHRM from a symbolic initiative into a driver of sustainable performance.

6. SUMMARY

This study examines the relationship between Green Human Resource Management (GHRM) and employee efficiency in emerging small businesses in Nanjing, China, with a focus on the mediating role of employee motivation. Using a quantitative approach, data were collected from 357 employees through structured questionnaires and analyzed via SPSS 24.0. Results show that while GHRM significantly enhances employee motivation, it does not significantly mediate the relationship between GHRM and employee training participation or overall efficiency. Similarly, teamwork and training, though positively associated with GHRM, fail to mediate the GHRM-efficiency link. A surprising negative direct effect of GHRM on efficiency ($\beta = -0.168$, $p < 0.001$) suggests misalignment between green policies and daily workflows. The study proposes the GreenEdge360 framework, advocating for job-relevant green training, sustainability KPIs, cross-functional collaboration, and digital platforms to bridge policy intent and operational outcomes. Limitations include a cross-sectional design and regional focus, with recommendations for future longitudinal studies and cultural contextual analysis. The research highlights the need for context-specific GHRM strategies to translate sustainability goals into measurable employee efficiency gains in emerging SMEs.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this paper.

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