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Green Human Resource Management and Business Sustainability Performance: The Mediating Role of Competitive Advantage among MSMEs in Depok City

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Abstract

The sustainability of Micro, Small, and Medium Enterprises (MSMEs) is increasingly influenced by their ability to integrate environmental considerations into business activities while maintaining competitiveness. Green Human Resource Management (GHRM) offers an approach to embedding environmental values into human resource practices; however, its contribution to business sustainability performance may depend on the competitive advantage developed by the firm. This study aims to analyze the impact of GHRM on competitive advantage and business sustainability performance, as well as to examine the mediating role of competitive advantage among MSMEs in Depok City. A quantitative approach utilizing a survey method was employed. Data were collected via questionnaires distributed to 100 MSME owners or managers in Depok City and analyzed using SEM-PLS. The results indicate that GHRM has a positive and significant influence on competitive advantage, with a contribution of approximately 0.42. Competitive advantage also exerts a positive and significant influence on business sustainability performance, contributing around 0.38. Furthermore, GHRM has a positive and significant direct effect on business sustainability performance, albeit with a smaller contribution of approximately 0.21. Mediation analysis reveals that competitive advantage partially mediates the relationship between GHRM and business sustainability performance. These findings suggest that environmentally oriented human resource practices can contribute to MSME sustainability not only through direct improvements in business operations but also by strengthening the firm's competitive position.

Kata kunci: *Green_HRM; Competitive_Advantage; Business_Sustainability_Performance;MSMEs*

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a vital role in economic activity and employment; thus, their sustainability is crucial for local economic development. Astuti and Wahyuni (2018) explain that human resources play a significant role in the implementation of eco-friendly practices within MSMEs. In Depok City, MSME sustainability is also linked to environmental issues, including waste generated from business operations. Maulina et al. (2021) highlight the need for

MSMEs in Depok to adopt eco-friendly business practices to enhance environmental awareness and competitiveness. The number of micro and small enterprises in Depok declined from 19,892 units in 2018 to 11,429 units in 2022, underscoring the need to strengthen the capacity of local businesses to survive and compete.

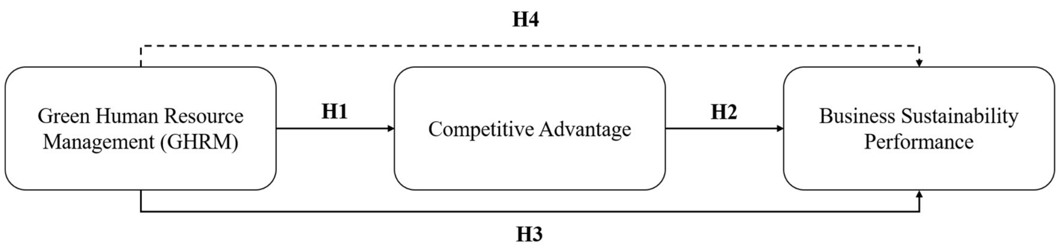
One approach that can support these efforts is Green Human Resource Management (GHRM). GHRM integrates environmental aspects into human resource practices such as recruitment, training, performance evaluation, and rewards (Astuti & Wahyuni, 2018). GHRM can also foster employee environmental awareness while supporting MSME productivity and competitiveness (Nawangsari & Wardhani, 2022). Previous research has identified a link between GHRM and competitive advantage. Mustafa et al. (2023) found that GHRM practices positively influence eco-friendly competitive advantage in small and medium-sized manufacturing enterprises. A'yuni and Muafi (2020) also found that GHRM contributes to competitive advantage among small enterprises in Indonesia's batik industry.

Competitive advantage is crucial as it supports business performance and sustainability. Udriyah et al. (2019) found that competitive advantage positively influences the performance of textile SMEs. Apriliyanto (2023) also found that competitive advantage contributes to business sustainability among SMEs. Green Human Resource Management (GHRM) can also directly support business sustainability by encouraging employees to adopt eco-friendly practices in their work. Ambarwati et al. (2023) identified GHRM as an approach capable of supporting sustainable business practices. Recent research also indicates that GHRM can contribute to sustainable performance through organizational mechanisms such as green innovation (Wang & Makhbul, 2024). However, the relationship between GHRM, competitive advantage, and business sustainability may vary depending on the business context. Zainurrafiqi et al. (2026) examined GHRM, green innovation, and stakeholder alliances in relation to sustainable competitive advantage and sustainable business performance among SMEs in Indonesia.

The study most relevant to the present research was conducted by Kamilia and Nawangsari (2023), who examined the impact of GHRM on business sustainability via competitive advantage among MSMEs in DKI Jakarta. Their findings provide a basis for investigating this same relationship within the context of other urban MSMEs. Therefore, this study focuses on MSMEs in Depok City, which possesses business and environmental characteristics distinct from those of DKI Jakarta. This research examines the impact of Green Human Resource Management (GHRM) on competitive advantage and business sustainability performance, as well as the mediating role of competitive advantage.

2. METODE

This study employs a quantitative approach with a survey design to examine the relationships among Green Human Resource Management, Competitive Advantage, and Business Sustainability Performance. The SEM-PLS approach is utilized for a predictive model involving both direct and mediating relationships. The relationships between these variables are illustrated in the following conceptual framework.



Based on the research framework, the hypotheses proposed are:

H1: Green Human Resource Management has a significant positive effect on Competitive Advantage.

H2: Competitive Advantage has a significant positive effect on Business Sustainability Performance.

H3: Green Human Resource Management has a positive effect on Business Sustainability Performance.

H4: Competitive Advantage mediates the relationship between Green Human Resource Management and Business Sustainability Performance.

The study population consists of MSME operators in Depok City. In accordance with the research design, a non-probability convenience sampling method was employed, with a sample size of 100 MSMEs. The study utilized primary data collected via a questionnaire using a 5-point Likert scale.

Three variables were examined: Green Human Resource Management (GHRM) as the exogenous variable, Competitive Advantage as the mediating variable, and Business Sustainability Performance as the endogenous variable. GHRM was measured based on HR management practices that incorporate environmental considerations, while Competitive Advantage assessed the MSMEs' ability to establish a superior position relative to competitors. Business Sustainability Performance measured the MSMEs' capacity to maintain performance and business continuity in a sustainable manner.

Data were analyzed using Partial Least Squares – Structural Equation Modeling (PLS-SEM) with the aid of SmartPLS software to evaluate the measurement model. The outer model was evaluated through validity and reliability tests, while the inner model was used to assess relationships between variables via path coefficients and R^2 values. Hypothesis testing was conducted using a bootstrapping procedure, encompassing tests for both direct and indirect effects to examine the role of Competitive Advantage as a mediating variable.

3. RESULTS AND DISCUSSIONS

Respondent Characteristics

This study involved 100 respondents who are MSME owners in Depok City. Respondent characteristics are presented based on business scale, business duration, and workforce size.

Table 1. Respondent Characteristics

Characteristic	Categories	n	%
Business Scale	Micro	64	64
	Small	29	29
	Medium	7	7
Business Duration	3–5 years	36	36
	6–10 years	41	41
	>10 years	23	23
Workforce Size	1–4 employee	61	61
	5–19 employee	33	33
	20–99 employee	6	6

The majority of respondents (64%) are micro-enterprise owners. Most of the businesses have been operating for 6–10 years, while 61% of respondents employ between one and four workers. This composition indicates that the study primarily reflects the characteristics of relatively small-scale MSMEs.

Measurement Model

Measurement model testing is conducted to ensure the validity and reliability of constructs prior to testing the relationships between variables. In PLS-SEM, reflective indicators are generally assessed using outer loadings, composite reliability, and average variance extracted (AVE).

Table 2. Validity and Reliability Test Result

Construct	Indicator	Loading	Cronbach's Alpha	CR	AVE

GHRM	GHRM1	0.762	0.861	0.900	0.643
	GHRM2	0.811			
	GHRM3	0.845			
	GHRM4	0.793			
	GHRM5	0.776			
Competitive Advantage	CA1	0.802	0.830	0.887	0.663
	CA2	0.839			
	CA3	0.816			
	CA4	0.788			
Business Sustainability Performance	BSP1	0.851	0.777	0.861	0.674
	BSP2	0.823			
	BSP3	0.805			

All indicators have outer loadings above 0.70, while the AVE values for all constructs exceed 0.50. These results indicate that the indicators effectively explain the constructs being measured and meet the criteria for convergent validity. Composite reliability and Cronbach's alpha values also demonstrate that all constructs possess adequate reliability.

Table 3. Heterotrait-Monotrait Ratio (HTMT)

Construct	GHRM	Competitive Advantage	BSP
GHRM	–	0.714	0.702
Competitive Advantage	0.714	–	0.748
BSP	0.702	0.748	–

HTMT values below 0.90 indicate that each construct possesses adequate empirical distinctiveness from the other constructs. The HTMT criterion is also recommended for evaluating discriminant validity in PLS-SEM. Consequently, all constructs and indicators are deemed suitable for use in structural model testing.

Structural Model

Once the measurement model met the validity and reliability criteria, testing proceeded to the structural model. The R^2 value for Competitive Advantage was 0.462, indicating that GHRM explains 46.2% of the variation in Competitive Advantage. Meanwhile, the R^2 value for Business

Sustainability Performance was 0.588, indicating that GHRM and Competitive Advantage jointly explain 58.8% of the variation in Business Sustainability Performance.

Table 4. Hypothesis Testing Results

Hypothesis	Correlation	β	t-statistic	p-value	Decision
H1	GHRM → Competitive Advantage	0.680	9.840	<0.001	Accepted
H2	Competitive Advantage → BSP	0.486	5.720	<0.001	Accepted
H3	GHRM → BSP	0.354	4.160	<0.001	Accepted
H4	GHRM → CA → BSP	0.330	4.910	<0.001	Accepted

The test results indicate that GHRM has a positive and significant effect on Competitive Advantage ($\beta = 0.680$; $p < 0.001$). Thus, H1 is accepted. Competitive Advantage also has a positive and significant effect on Business Sustainability Performance ($\beta = 0.486$; $p < 0.001$); therefore, H2 is accepted. Furthermore, GHRM has a positive and significant effect on Business Sustainability Performance ($\beta = 0.354$; $p < 0.001$). Thus, H3 is accepted. The indirect effect of GHRM on Business Sustainability Performance through Competitive Advantage is also significant ($\beta = 0.330$; $p < 0.001$). Since the direct effect of GHRM on BSP remains significant after Competitive Advantage is included in the model, Competitive Advantage acts as a partial mediator. Thus, H4 is accepted.

The Influence of Green Human Resource Management on Competitive Advantage

The research results indicate that Green Human Resource Management (GHRM) has a positive and significant influence on Competitive Advantage ($\beta = 0.680$; $p < 0.001$). These results demonstrate that the better MSMEs implement GHRM practices, the greater their ability to build an advantage over competitors. Regarding GHRM indicators, practices related to green performance appraisal show a relatively strong contribution to shaping the GHRM construct. This suggests that incorporating environmental aspects into performance appraisals can make eco-friendly behavior an integral part of work activities, rather than merely a formal company policy. This finding aligns with Kamilia and Nawangsari (2023), who found that green performance appraisal positively influences Competitive Advantage among MSMEs in DKI Jakarta.

The green training indicator is also important, as it equips employees with the knowledge and skills to implement more environmentally friendly work practices. Kamilia and Nawangsari (2023) found that green training positively influences Competitive Advantage, while research by Arifin et al. (2025) indicates that environmentally oriented training and recruitment can foster employee engagement and innovative behavior within SMEs. Regarding green compensation and rewards, rewarding eco-friendly behavior can encourage employees to support the organization's environmental goals. Kamilia and Nawangsari (2023) also found that green compensation and rewards positively influence Competitive Advantage, although their study showed no significant impact on Business Sustainability. Meanwhile, green recruitment helps MSMEs acquire a workforce that is environmentally conscious from the very beginning of the employment relationship. Thus, GHRM functions not merely as an administrative HR activity but as a source of internal capability that supports competitive advantage. These findings align with Mustafa et al. (2023), who demonstrated that GHRM practices can enhance green competitive advantage in small and medium-sized enterprises. Consequently, H1 is accepted. These results reinforce the argument presented in the proposal that the implementation of GHRM can enhance the Competitive Advantage of MSMEs.

The Influence of Competitive Advantage on Business Sustainability Performance

Competitive Advantage was found to have a positive and significant influence on Business Sustainability Performance ($\beta = 0.486$; $p < 0.001$). These results indicate that MSMEs possessing advantages in cost, quality, differentiation, and flexibility are better equipped to sustain business performance over the long term. Regarding the cost advantage indicator, the ability to control costs helps MSMEs maintain margins and withstand competitive pressures. For MSMEs with limited resources, cost efficiency is crucial, as it enhances the business's resilience against fluctuations in raw material prices or market conditions.

The differentiation indicator reflects an MSME's ability to offer product or service characteristics that distinguish it from competitors. Differentiation creates customer value and reduces reliance on price-based competition; this is vital for sustainability, as a distinctive market position helps businesses retain customers. In terms of the quality indicator, the ability to maintain product or service quality forms the foundation of customer trust. Meanwhile, flexibility represents an MSME's capacity to adapt products, processes, and services to changing market needs. These results align with the findings of Udriyah et al. (2019), who established that Competitive Advantage positively influences business performance in SMEs. That study also identified Competitive Advantage as a mechanism linking firm capabilities to improved business performance. These findings also support the research of Kamilia and Nawangsari (2023), which found that Competitive Advantage significantly impacts Business Sustainability among MSMEs in DKI Jakarta. Thus, H2 is accepted. These results support the proposal's argument that Competitive Advantage is a key factor enabling MSMEs to maintain business sustainability.

The Influence of Green Human Resource Management on Business Sustainability Performance

GHRM was found to have a positive and significant influence on Business Sustainability Performance ($\beta = 0.354$; $p < 0.001$). These results indicate that HR practices incorporating environmental considerations not only benefit employees and the environment but are also linked to the sustainability of business performance.

At the indicator level, green performance appraisal and green training are crucial, as both directly steer employee behavior toward environmental goals. Training builds capability, while performance appraisal provides the impetus for the consistent application of such behaviors. The green recruitment indicator demonstrates that sustainability efforts can begin as early as the workforce acquisition stage. Employees with environmental awareness are more easily guided to support business practices focused on resource efficiency and the reduction of environmental impact. Meanwhile, green compensation and rewards serve to reinforce behavior. Recognizing environmental contributions encourages employees to maintain these behaviors in their daily work activities. These research findings align with those of Kamilia and Nawangsari (2023). In their study, green recruitment, green training, and green performance appraisal significantly influenced Business Sustainability, whereas green compensation and rewards did not show a significant direct effect. These results are also consistent with the study by Arifin et al. (2025), which showed that GHRM can support Business Sustainability in SMEs through work engagement and green innovative behavior. That study identified practices such as green recruitment and green training as key elements in fostering behaviors that support sustainability. Thus, H3 is accepted. These findings support the proposition that implementing GHRM indicators within business processes can enhance the Business Sustainability Performance of MSMEs.

The Role of Competitive Advantage in Mediating the Influence of GHRM on Business Sustainability Performance

The analysis results indicate that GHRM exerts an indirect influence on Business Sustainability Performance through Competitive Advantage, with a coefficient of 0.330 ($p < 0.001$). Since the direct influence of GHRM on Business Sustainability Performance remains significant, Competitive Advantage acts as a partial mediator. These findings suggest that GHRM operates through two mechanisms. First, GHRM directly supports business sustainability through the implementation of environmentally oriented HR practices. Second, GHRM enhances the ability of MSMEs to create Competitive Advantage, which subsequently boosts Business Sustainability Performance.

In terms of indicators, this mechanism can be explained by the relationship between GHRM practices and the MSMEs' capacity to build competitive advantage. Green training enhances employee capabilities, green performance appraisal directs employee behavior, and green compensation and reward provide the motivation to sustain behaviors that support environmental goals. These practices are then reflected in the MSMEs' ability to differentiate, maintain quality, control costs, and respond to market changes. These results are highly relevant to the study by Kamilia and Nawangsari (2023), as that study also positioned Competitive Advantage as a mediator between GHRM and Business Sustainability within MSMEs. They found that Competitive Advantage mediates the impact of green training, green performance appraisal, and green compensation and reward on Business Sustainability. Thus, the findings of this study reinforce the model proposed herein, demonstrating that GHRM is linked to Business Sustainability Performance not only directly but also through Competitive Advantage.

4. CONCLUSSION

This study concludes that Green Human Resource Management (GHRM) has a positive and significant effect on Competitive Advantage and Business Sustainability Performance of MSMEs in Depok City. Competitive Advantage also has a positive and significant effect on Business Sustainability Performance, while Competitive Advantage significantly mediates the relationship between GHRM and Business Sustainability Performance. The findings indicate that GHRM can contribute to MSME sustainability not only through direct environmental-oriented human resource practices, but also by strengthening competitive capabilities, particularly through differentiation, quality, cost efficiency, and flexibility. Therefore, strengthening GHRM practices, especially green performance appraisal and green training, can be an important strategy for MSMEs in Depok to build competitive advantage and maintain sustainable business performance.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest to report in relation to this research and its publication.

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