International Journal of Innovative Research and Scientific Studies, 8(1) 2025, pages: 728-740

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

The influence of green organizational culture as a moderator on the determinants of triple bottom line performance in Indonesia hospital

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Abstract

This study aims to examine the influence of green human resource management (GHRM) and green supply chain management (GSCM) on triple bottom line performance in Indonesian hospitals, with a focus on the moderating role of green organizational culture and the mediating effect of GSCM. Primary data were collected from 850 functional procurement staff in hospitals under Indonesia's Ministry of Health through questionnaires distributed between March and June 2024. A total of 265 respondents were selected using disproportionate stratified random sampling based on the Krejcie method with a 5 percent margin of error. The data were analyzed using partial least squares structural equation modeling (PLS-SEM). The findings reveal that GHRM significantly enhances environmental and social performance but has no effect on economic performance. GSCM effectively mediates the relationship between GHRM and triple bottom line performance. Additionally, green organizational culture strengthens the relationship between GHRM and environmental performance but does not moderate its relationship with economic performance. The study highlights the importance of integrating green practices into hospital operations, particularly through eco-friendly employee training, supply chain efficiency, waste reduction, and the cultivation of a green organizational culture to promote sustainability. The study recommends the adoption of environmentally friendly practices to ensure long-term environmental health, social responsibility, and resource conservation in hospitals.

Keywords: Green human resource management, Green organizational culture, Green supply chain management, Hospital, Sustainability, Triple bottom line.

DOI: 10.53894/ijirss.v8i1.4418
Funding: This study received no specific financial support.
History: Received: 4 December 2024/**Revised:** 8 January 2025/**Accepted:** 17 January 2025/**Published:** 31 January 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Publisher: Innovative Research Publishing

1. Introduction

Actions to achieve sustainability across various sectors, including healthcare such as hospitals, can be realized through

the implementation of a strategic concept known as the Triple Bottom Line (TBL) [1, 2]. The TBL concept refers to the integration of three key dimensions: economic performance (ECP), environmental performance (ENP), and social performance (SP) [3, 4]. The application of TBL is particularly relevant given the increasing pressure on businesses and organizations to focus not only on economic profits but also on social responsibility and environmental sustainability. This highlights the importance of balancing these three aspects to create a sustainable, positive impact. Furthermore, TBL in the context of hospitals serves as a foundation that guides healthcare institutions in fulfilling their multifaceted responsibilities. It provides a framework for delivering quality healthcare services due to a commitment to medical waste management and improving the well-being of society at large [5, 6]. This approach ensures that hospitals address their economic, social, and environmental impacts holistically.

In addition, various previous studies claim that implementing TBL in hospitals not only improves financial performance but also brings several other important benefits, such as improved operational efficiency, stronger organizational reputation, and the creation of good relationships between patients and hospital staff [7, 8]. Moreover, hospitals are also encouraged to implement actions that focus on enhancing environmental sustainability, such as through energy efficiency, proper medical waste management, and optimal resource utilization, all of which support ecosystem sustainability [9, 10]. The hospital's contribution to TBL in the social aspect will enhance inclusivity in healthcare delivery, improve the welfare of medical staff, and raise the quality of life in communities [11]. Aggregating the confirmation from various studies, TBL will create harmony between ECP, ENP, and SP with a long-term orientation, meaning it serves as an instrument to meet the sustainability demands of hospitals.

More specifically, hospitals that implement TBL are closely linked to the strategic role of green human resource management (GHRM), green supply chain management (GSCM), and green organizational culture (GOC), which are key components for creating effective integration between ECP, ENP, and SP to achieve sustainability. First, GHRM contributes to building an environmentally friendly workforce through recruitment, training, and supporting sustainability initiatives within the work culture [12]. As found by Aini, et al. [13] and Bortoluzzi, et al. [14] awareness of medical waste management increases by creating a work environment that motivates employees to adopt pro-environmental behaviors. Second, GSCM emphasizes the importance of an eco-friendly supply chain from sourcing medical supplies to distribution and waste management. On the other hand, Chang, et al. [15] and Regragui, et al. [16] found that GSCM contributes to reducing carbon emissions, improving resource usage efficiency, and utilizing environmentally friendly technologies in the supply chain. Equally important, implementing GSCM can also address operational cost inefficiencies while ensuring that hospital products and services comply with environmental standards [17]. Third, GOC contributes to hospitals by supporting sustainability that encourages employees to show concern for environmental issues, including medical waste management and energy efficiency [18]. According to research by Aggarwal and Agarwala [19] GOC helps hospitals achieve sustainability comprehensively in implementing TBL.

Although the roles of GHRM, GSCM, and GOC in supporting TBL in hospitals have been recognized, research exploring the direct link between the three is still limited. Many studies treat them separately, without exploring the potential synergy between them. As seen in the hospitals under Indonesia's Ministry of Health, there are issues and challenges in effectively integrating the three dimensions of TBL. The empirical phenomenon of hospitals in Indonesia, particularly those under the Ministry of Health, indicates that the challenges of managing sustainable hospitals are becoming increasingly complex. These hospitals often face issues related to limited human resources, such as shortages of medical staff and nurses, as well as the need to enhance professional competencies [20]. Additionally, financial constraints pose significant challenges, given the high operational costs and reliance on government funding [21]. Hospitals are also confronted with infrastructure issues, including the need to modernize facilities and medical technology to remain competitive with more advanced private hospitals [22]. Furthermore, there is growing demand to provide high-quality healthcare services, especially in remote areas far from urban centers [23, 24].

Hospitals in Indonesia face significant challenges in TBL performance. From an economic perspective, around 30% of hospitals are at financial risk due to low reimbursement rates from social security administrators, which do not align with operational costs, especially in underdeveloped and remote areas [25]. This financial strain impacts hospitals' ability to maintain service quality, purchase modern medical equipment, and ensure long-term sustainability. On the social side, unequal access to healthcare services is a persistent issue. The hospital bed ratio in Indonesia is just 1.5 per 1,000 people, far below the World Health Organization’s standard of 2.5 [26]. This gap is compounded by the uneven distribution of healthcare facilities, with eastern regions like Papua and East Nusa Tenggara suffering from insufficient infrastructure and medical personnel. As a result, many people must travel long distances or are unable to access proper healthcare services. Third, from an environmental perspective, medical waste management presents a major challenge for hospitals in Indonesia. Approximately 70% of medical waste generated by hospitals is not managed according to established standards. Waste such as syringes, chemicals, and pharmaceutical residues can contaminate water, soil, and air if not properly handled [27]. This not only endangers the environment but also increases health risks for communities near hospitals.

To address these challenges, Ministry of Health hospitals must continually improve management practices, leverage technology, and adopt data-driven approaches to ensure the implementation of TBL framework, enhancing the quality of healthcare services. The empirical challenges outlined above highlight the necessity of exploring innovative strategies to address sustainability issues in hospitals. Based on these explanations, the research gap presents an opportunity to develop a more comprehensive theoretical and empirical framework by integrating TBL, GHRM, GSCM, and GOC. This study introduces novelty by examining the moderating role of GOC in the relationship between GHRM and both ECP and ENP, as well as the mediating role of GSCM in the relationship between GHRM and all dimensions of TBL. Therefore, this research aims to provide new insights into the dynamics of green policies and sustainable performance in hospitals under

the Ministry of Health, Indonesia, conducted in 2024. This integrated approach bridges gaps and addresses practical challenges, offering actionable recommendations for stakeholders.

The research problem focuses on achieving sustainability in hospital performance by implementing TBL integrated with GHRM, GSCM, and GOC. Additionally, the study seeks to address empirical challenges faced by hospitals, such as financial risks, medical waste management, and inequalities in access to healthcare services, in relation to ECP, ENP, and SP. The research steps involve analyzing GOC's role as a moderator between GHRM and both ECP and ENP, along with exploring the mediating effect of GSCM on the relationship between GHRM and the dimensions of TBL. This study aims to provide valuable insights for the development of comprehensive green policy strategies and sustainable hospital performance.

2. Literature Review

2.1. Hypothesis GHRM

GHRM can improve ENP by implementing environmentally friendly policies and practices, such as providing environmental principles to employees, conducting environmental awareness training, and promoting motivation and environmental management skills. According to Longoni, et al. [28] GHRM plays a significant role in developing ENP. Additional studies, including those by Acquah, et al. [29] and Rawashdeh [30] also highlight a positive correlation between GHRM and ENP. Moreover, GHRM enhances efficiency and productivity through sustainability policies, such as value-based environmental recruitment, green skills training, and incentives for ECP. Bortoluzzi, et al. [14] found that GHRM contributes to ECP by boosting employee motivation and commitment. By focusing on both environmental and social sustainability, GHRM can also influence SP, with practices like value-based environmental recruitment improving the company's contribution to societal well-being. Research by Zaid, et al. [31] further confirms a positive impact of GHRM on SP, including social relationships within organizations and corporate social responsibility.

$H^{1:}$ GHRM influences ENP.
$H^{2:}$ GHRM influences ECP.
$H^{3:}$ GHRM influences SP.

2.2. Hypothesis GSCM

Studies show that GSCM benefits ENP by reducing pollution and operational costs Longoni, et al. [28] and Fitriyani, et al. [32]. GSCM also enhances ENP management capabilities [33] and is driven by pollution and environmental degradation, which, in turn, improve ENP. Companies implementing GSCM reduce waste impact and enhance ENP [34]. GSCM also improves operational efficiency, reduces environmental impact, and promotes ECP, as well as enhances organizational and financial performance [35]. The implementation of GSCM contributes to ECP through material and energy reduction, improving financial, operational, social, and environmental performance [36]. Additionally, GSCM has a positive impact on SP by improving worker safety and reducing environmental pollution and contamination [37].

$H_{4:}$ GSCM influences ENP
$H_{5:}$ GSCM influences ECP
$H_{6:}$ GSCM influences SP

2.3. Hypothesis GOC

GHRM is an approach aimed at supporting ENP through various practices, such as employee health programs focusing on fitness, nutrition, and healthy lifestyles [38]. GOC strengthens this relationship, as found by Acquah, et al. [29] also states that GOC strengthens the relationship between GHRM and ECP. Longoni, et al. [28] also affirms the role of GOC in enhancing the impact of GHRM on ENP. Furthermore, Zaid, et al. [31] shows that GHRM is indirectly related to ECP through GOC moderation, thus GOC strengthens the positive relationship between GHRM and ENP. Additionally, GHRM increases efficiency and productivity, impacting ECP. GOC, which supports sustainability, has the potential to strengthen this relationship by directing employee behavior and company strategies toward more environmentally friendly practices [32].

$H_{7:}$ GOC moderates the effect of GHRM on ENP
$H_{8:}$ GOC moderates the effect of GHRM on ECP

2.4. Hypothesis GSCM

GHRM has a positive impact on ENP [28] which is further strengthened by GSCM. Central Statistics Agency [26] found that well-managed GHRM through GSCM can encourage companies to be more committed to sustainable resource management and reduce environmental impact. Longoni, et al. [28] also support that GSCM mediates the relationship between GHRM and ENP. GHRM contributes to improving ECP, with GSCM as a mediator, as shown by Tulcanaza-Prieto, et al. [39]. GHRM practices, such as green recruitment and training, have been shown to enhance ECP [33]. Additionally, GHRM positively impacts GSCM, which mediates the improvement of SP by reducing implementation barriers and more effectively mobilizing human resources in sustainability [29].

$H_{9:}$ GSCM mediates the effect of GHRM on ENP
$H_{10:}$ GSCM mediates the effect of GHRM on ECP
$H_{11:}$ GSCM mediates the effect of GHRM on SP

The conceptual framework of this study is designed based on the foundation of the hypotheses presented, as shown in Figure 1.

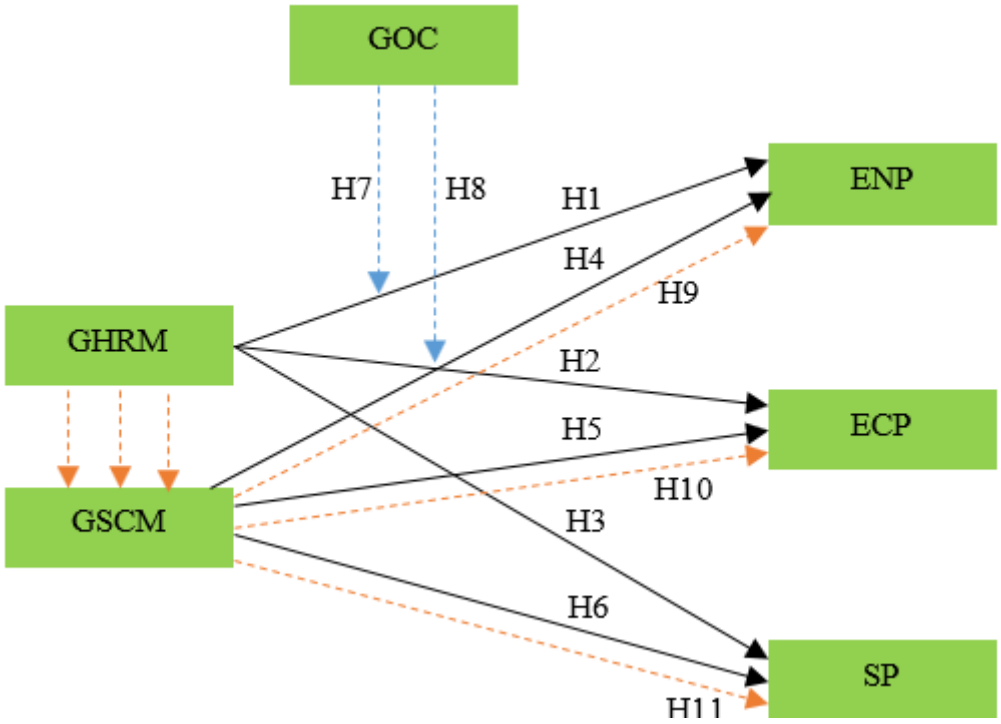

Figure 1.
Conceptual framework of the study.

3. Methodology

3.1. Type And Source of Data

This study utilizes primary data. The data used in this research were directly obtained from the source, specifically collected and relevant to the topic being studied through the distribution of questionnaires to selected respondents between March and June 2024.

3.2. Data Collection

The population in this study consists of 850 employees serving as procurement managers in hospitals under Indonesia's Ministry of Health. This population includes employees assigned to working groups, commitment-making officials, and procurement officials. Disproportionate stratified random sampling was used to determine the sample size, which is suitable for a stratified but not proportional population. The sample size was determined based on the sample size formula developed by Krejcie [40] with a 5 percent (%) margin of error, so the required size is 265 respondents. To further understand the characteristics of the selected respondents, based on the sampling technique and established criteria, please refer to Table 1.

Table 1.
Respondents' characteristics.

Characteristics	Option	Achievements	
		Frequency	%
Gender	Man	130	49.06
	Woman	135	50.94
Age	18-30 years	12	4.53
	31-40 years	49	18.49
	41-50 years	105	39.62
	Over 50 years	99	37.36
Education	Senior high school	2	0.75
	Diploma	20	7.55
	Bachelor	150	56.60
	Master	90	33.96
	Doctorate	3	1.13

Based on Table 1, the characteristics of respondents in this study were nearly evenly distributed by gender, with 50.94% being women and 49.06% men. In terms of age, the majority were aged 41–50 years (39.62%), followed by those

over 50 years (37.36%), while younger age groups, 31–40 years and 18–30 years, accounted for 18.49% and 4.53%, respectively. Regarding education level, the largest proportion held a bachelor's degree (56.60%), followed by a master's degree holder (33.96%). Smaller percentages were observed for diploma holders (7.55%), doctorate holders (1.13%), and senior high school graduates (0.75%). This demographic data highlights a highly educated sample predominantly in middle to older age groups.

3.3. Research Variables

The variables analyzed in this study consist of independent variables (GHRM and GSCM) and a moderating variable (GOC). Additionally, GSCM also serves as a mediating variable. Furthermore, this study includes dependent variables, which are the components of TBL (ECP, ENP, and SP). The indicators for each of these variables are presented in Table 2.

Table 2.
Research variables and measurements.

Variable	Definition	Measurement items	Source
GHRM	Human resource practices integrate ecological goals into planning, recruitment, training, performance management, employee engagement, evaluation, and rewards.	13 Items	Maskuroh, et al. [37]
GOC	Environmentally friendly strategies implemented within organizational culture to enhance company performance through employees' values, attitudes, and behaviors in environmentally focused activities.	14 Items	[41]
GSCM	An approach to enhancing environmental resilience through green procurement and integrating supplier-to-customer distribution in government hospitals.	8 Items	Sharma, et al. [42] and Shin and Cho [43]
ECP	The level of success in financial and marketing performance, reflected in the reduction of energy, processing, and waste disposal costs, leads to organizational revenue growth due to implementing environmentally friendly practices.	3 Items	Bortoluzzi, et al. [14] and Longoni, et al. [28]
ENP	The organization's ability to minimize environmental accident risks and reduce the consumption of hazardous and toxic materials.	6 Items	Bortoluzzi, et al. [14]; Longoni, et al. [28] and Paillé, et al. [44]
SP	The organization's ability to enhance social aspects related to supporting employee safety and health, as well as providing quality services to customers and the community, by professional commitments and ethics.	7 Items	Svensson, et al. [4]; Bortoluzzi, et al. [14] and Rawashdeh [30]

3.4. Data Analysis

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships among the defined variables. The analytical process begins with testing the outer loading (OL), which involves assessing the loading factor (LF), composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha (CA) to evaluate the validity and reliability of the constructs. Following this, discriminant validity (DV) testing is conducted to confirm the uniqueness and distinction of each construct within the model. Lastly, hypothesis testing is performed through structural model testing, using path coefficients and their significance levels to evaluate the causal relationships among variables.

PLS-SEM was selected for this study due to its ability to handle complex data with small sample sizes and models containing multiple interrelated variables. This approach differs from those used in prior studies, which often employed techniques like linear regression or factor analysis. These methods have limitations in dealing with correlated variables or non-normally distributed data. By utilizing PLS-SEM, this study offers a more comprehensive understanding of the simultaneous relationships among the model's variables.

4. Results

4.1. OL

The four main indicators used to interpret OL in Table 3 are LF, CR, AVE, and CA. LF assesses the strength of the relationship between indicators and the structure, with a validity threshold of at least 0.70. CR measures the internal reliability of the structure, with a consistency threshold of at least 0.70. AVE indicates convergent validity, with a threshold

of at least 0.50. CA assesses the reliability of the constructs and is considered acceptable if it exceeds 0.70. For further analysis, only indicators that meet these criteria are used to ensure robust and reliable results.

Table 3.
OL result components.

Indicator	Loading factor	Composite reliability	Average variance extracted	Cronbach's Alpha
GHRM		0.926	0.517	0.961
Prioritizing recruitment of employees with environmental knowledge and awareness.	0.728			
Interviewing candidates to assess their environmental understanding.	0.775			
Environmental awareness is a valuable addition in recruitment.	0.735			
Seeking employees interested in natural environments and eco-friendly policies.	0.721			
Job descriptions include environmental aspects.	0.882			
Employee selection announcements highlight environmental values.	0.788			
Environmental training is provided to enhance awareness.	0.825			
Satisfaction with the environmental training.	0.851			
Employees are rewarded for improving environmental programs.	0.787			
Formal environmental training supports competency and career growth.	0.717			
Environmental training is a key investment for profit.	0.799			
Training helps employees adopt eco-friendly practices.	0.929			
Environmental knowledge and awareness are measured through training.	0.898			
GOC		0.982	0.798	0.981
Belief that regulations focusing on environmental practices negatively impact financial performance.	0.797			
Work culture prioritizes environmental values.	0.758			
Internal processes support pro-environment initiatives.	0.735			
Environmentally conscious leaders are sidelined by internal politics.	0.782			
Cultural differences between units hinder environmental value development.	0.937			
Environmental values vary by work unit based on employee background.	0.893			
Uneven application of environmental values due to physical separation of units.	0.928			
Leaders speak positively about eco-friendly practices during informal moments.	0.879			
Leadership ignores public criticism of emissions/waste from hospital discharge.	0.985			
Leadership addresses emissions/waste criticism with sincere eco-friendly initiatives.	0.783			
Service philosophy emphasizes environmental issues and performance.	0.947			
Rejection of eco-friendly practices as a "fad/camouflage" by leadership.	0.757			
Leadership believes eco-friendly practices don't affect hospital profits.	0.977			
Employee resistance to environmental issues and changes.	0.987			
GSCM		0.861	0.562	0.880
Goods must be sourced from suppliers who comply with environmental regulations.	0.825			
Environmental compliance audits for suppliers are mandatory.	0.841			
Procurement requires products from suppliers to have environmental certification.	0.722			
Contracted suppliers must be green partners.	0.742			
Suppliers are trained to make recyclable packaging.	0.743			
Purchases are made from suppliers of eco-friendly products.	0.943			
Suppliers must comply with local regulations for eco-friendly production.	0.981			
Internal policies require suppliers to promote eco-friendly products	0.950			

Indicator	Loading factor	Composite reliability	Average variance extracted	Cronbach's Alpha
throughout the process.				
ECP		0.817	0.609	0.889
Using energy-efficient equipment to reduce operational costs.	0.991			
Using eco-friendly products to lower waste disposal costs.	0.761			
Increased profits from reduced energy use and waste through recycling.	0.741			
ENP		0.873	0.547	0.885
Increasing procurement of eco-friendly items like medicines and medical supplies.	0.722			
Reducing environmental risks through proper procedures for waste and emissions.	0.728			
Minimizing toxic emissions directly and indirectly.	0.946			
Using recyclable items to reduce waste.	0.914			
Consistently separating medical waste from general waste.	0.625			
Preserving the environment by creating workplace green spaces.	0.799			
SP		0.936	0.687	0.928
Strict regulations on hazardous materials and radiation ensure employee health and safety in specifications.	0.708			
Infection control measures improve public health and safety in specification/TOR preparation.	0.940			
High-quality medical facilities adhere to ethical service standards.	0.987			
The workplace promotes economic activities and local job opportunities.	0.994			
Environmentally friendly and recycled materials reduce waste impact in specifications.	0.938			
Service standards are improved with staff participation in decision-making.	0.740			
Professional ethics are upheld with strict infection control and antibiotic use.	0.754			

Based on the information from Table 3, the analysis results of all variables and indicators in this study meet the prerequisite criteria for validity and reliability from each selection test of LF, CR, AVE, and CA.

4.2. DV

The DV test in Table 4 ensures that the model constructs are not overlapping and are distinct. The heterotrait-monotrait (HTMT) ratio method is used to calculate the ratio between correlations of different construct components and correlations of the same construct indicators. Compared to other methods, HTMT detects DV more effectively. An HTMT value between constructs is considered acceptable if it is below 0.85. Based on the information in Table 4, overall, the variable pairs show good DV, and there is no potential overlap between the variables. This confirms that the constructs are reliable and adequately differentiated. Such results reinforce the validity of the model, ensuring an accurate interpretation of relationships between constructs.

Table 4.
DV result.

Variables	GHRM	GOC	GSCM	ECP	ENP	SP
GHRM						
GOC	0.383					
GSCM	0.496	0.688				
ECP	0.406	0.333	0.749			
ENP	0.444	0.731	0.774	0.441		
SP	0.325	0.540	0.580	0.388	0.802	

4.3. Hypothesis Test

Table 5 summarizes the hypothesis testing results in this study, with a significance level of α = 5% (0.05) used to calculate the confidence level. Based on the analysis, the hypothesis is accepted if the Probability (P) value is less than 0.05, and vice versa. This study divides the hypotheses into three groups: H1 to H6, which test direct relationships; H7 to H8, which test moderation relationships; and H9 to H11, which test mediation effects.

Table 5.
Hypothesis test results.

H	Hypothesis	Coefficient	P	Decision
H1	GHRM affects ENP	0.134	0.005***	Accepted
H2	GHRM affects ECP	0.024	0.265	Rejected
H3	GHRM affects SP	0.155	0.001***	Accepted
H4	GSCM affects ENP	0.134	0.000***	Accepted
H5	GSCM affects ECP	1.065	0.000***	Accepted
H6	GSCM affects SP	0.112	0.001***	Accepted
H7	GOC moderates the effect of GHRM on ENP	0.075	0.000***	Accepted
H8	GOC moderates the effect of GHRM on ECP	0.002	0.917	Rejected
H9	GSCM mediates the effect of GHRM on ENP	0.303	0.002***	Accepted
H10	GSCM mediates the effect of GHRM on ECP	0.469	0.000***	Accepted
H11	GSCM mediates the effect of GHRM on SP	0.268	0.007***	Accepted

Note: Where the *** symbol indicates significance at the 1% alpha level.

5. Discussion

5.1. Impact of GHRM on ENP

The GHRM process aligns its practices with environmental management principles, such as hiring employees committed to environmental conservation, providing environmental training, and conducting performance evaluations that consider environmental aspects. The use of GHRM practices, such as rewarding employees who contribute to environmental conservation and performing performance assessments that include environmental factors, can enhance efficiency. These practices not only engage employees more in managing environmental issues but also help hospitals reduce their environmental impacts, such as managing the consumption of hazardous materials and waste. This finding is consistent with studies by Aftab, et al. [45] and Hameed, et al. [46] who found a positive and significant correlation between GHRM and environmental performance. This positive relationship underscores the importance of integrating environmental objectives into human resource management strategies to achieve sustainability goals.

5.2. Impact of GHRM on ECP

GHRM practices such as environmental-based assessment systems, training, and rewards may increase employee awareness and motivation about environmental management, but their effect on ECP and hospital marketing has not yet been strong enough to show statistical significance. Environmentally friendly jobs and green rewards are examples of GHRM that can strengthen the company by reducing emissions, energy costs, and waste management. However, to optimize ECP from GHRM, greater emotional engagement from employees is needed, as well as a strategic integration of environmental policies and hospital operations. Furthermore, previous research indicates that the efficiency of GHRM on ECP depends on how actively the company involves employees in environmental initiatives [47, 48]. This highlights the importance of adopting a systemic approach to achieve sustainable ECP through GHRM.

5.3. Impact of GHRM on SP

When GHRM is implemented through recruitment, training, and environmental-based rewards, it enhances employee health, workplace safety, and better community service, ultimately improving SP. Green training increases employees' awareness of SP and their ability to save energy and reduce waste, thus improving the hospital's reputation. Green reward systems, both financial and non-financial, enhance the hospital's competitiveness and encourage employees to support sustainable SP. A study by Jiang, et al. [49] highlights the role of GHRM in SP and sustainability. Additionally, Amrutha and Geetha [50] emphasizes the significant influence of GHRM in building sustainability-based competitive advantage. Moreover, Kumari and Kumar [51] found that GHRM is significant, indicating that the strategic management of GHRM is crucial to improving the hospital's SP.

5.4. Impact of GSCM on ENP

By establishing long-term relationships with suppliers, GSCM can improve ENP by incorporating environmental considerations into purchasing decisions. Hospitals can mitigate risks associated with accidents, hazardous materials, waste, and excessive energy use. Additionally, sourcing environmentally friendly raw materials enhances the hospital's reputation among environmentally conscious patients, further boosting ENP. GSCM practices also encourage suppliers to adopt greener practices, leading to the production of products with lower environmental impact. This study aligns with the findings of Seman, et al. [52] which highlight the role of GSCM in improving efficiency and reducing costs through waste management and energy savings. Al-Sheyadi, et al. [53] similarly note that GSCM strengthens a company's commitment to better waste management. Furthermore, Emmanuel, et al. [33] demonstrate that GSCM implementation enhances environmental management capabilities, which in turn positively impacts the hospital's ENP.

5.5. Impact of GSCM on ECP

Systematic supply chain management and the procurement of environmentally friendly raw materials are key components of GSCM that enhance ECP and boost a hospital's reputation as an environmentally conscious institution. The green purchasing process, which includes utilizing catalogs and online stores, appeals to environmentally conscious

patients and contributes to increased hospital revenue. Moreover, the adoption of eco-friendly materials leads to a reduction in the consumption of energy, water, and resources, as well as a decrease in emissions and waste. Consequently, GSCM not only fosters a sustainable ECP but also reduces operational costs and enhances budget management efficiency. The findings align with research by Ahmed, et al. [54] which indicates that GSCM enhances economic sustainability by reducing energy and material consumption. Additionally, Saeed, et al. [55] states that GSCM improves company efficiency and profitability by implementing environmentally friendly practices.

5.6. Impact of GSCM on SP

The use of eco-friendly raw materials and the purchasing system through catalogs or online stores are examples of GSCM practices that improve worker and community safety and health, supporting SP. This process reduces the consumption of fuel, paper, and energy resources, creating a safer and more efficient workplace and service. Green specifications for hospital goods and services encourage suppliers and employees to be more sustainable, reduce waste, and enhance SP and service efficiency. These results align with Fitriyani, et al. [32] who state that environmentally friendly standards improve community and employee perceptions of the hospital. Additionally, Maskuroh, et al. [37] and Yustrilia, et al. [38] support the idea that GSCM not only reduces environmental pollution but also enhances social trust through environmentally and socially responsible operational practices.

5.7. Impact of GHRM on ENP Moderated by GOC

GOC strengthens the relationship between GHRM and ENP by encouraging employees to develop new ideas, take risks in environmentally friendly practices, and integrate environmental considerations into every operational aspect. GOC also helps hospitals reduce emissions, waste, and hazardous material consumption through environmental training and rewarding employees who care about the environment. Setting a green-based mission, vision, and goals creates positive pressure on the organization to comply with sustainability principles, leading to improved ENP. Furthermore, GOC plays a crucial role as a moderator by shaping employees' behavior to be more innovative, proactive, and solution-oriented toward environmentally friendly practices, thus maximizing the positive impact of GHRM. This finding aligns with research by Chu, et al. [56] which shows that GOC moderates the influence of GHRM on ENP, particularly in reducing the negative operational impact of hospitals on the environment.

5.8 Impact of GHRM on ECP Moderated by GOC

GOC does not moderate the impact of GHRM on ECP, even though hospitals have integrated environmentally friendly principles into GOC aimed at improving performance through employees' values, beliefs, attitudes, and behaviors. This is due to the low level of internalization of environmental values by employees, which hinders the effectiveness of GOC in enhancing ECP. Therefore, hospital management must strengthen the implementation of GOC at every employee level and ensure that ecological aspects are a primary consideration in every operational decision and service provided. A study by Rawashdeh [30] found that GOC does not always play a significant moderating role in the relationship between GHRM and ECP. Additionally, according to Hadi, et al. [57] although GOC can improve ENP, it does not always have a direct impact on ECP. This is especially true in cases where GOC has not been fully internalized by employees in their daily behavior.

5.9 Impact of GHRM on ENP Mediated by GSCM

GHRM, as a new approach in human resource management, integrates ecological goals into every stage of employee management, from work planning to evaluation. GHRM, which includes human resource management practices supporting ENP, focuses on training, development, and empowering employees to play a role in the efficient management of natural resources. GSCM, on the other hand, integrates environmentally friendly practices across the entire supply chain, from raw material procurement to waste management. In the hospital context, the implementation of GSCM can strengthen the hospital's efforts to reduce its carbon footprint, manage medical waste wisely, and optimize energy use. This finding supports previous research by Awwad, et al. [58] which also found that GSCM mediates the influence of GHRM on ENP, as well as Longoni, et al. [28] who emphasized the importance of leadership and employee involvement in the effective implementation of environmental management.

5.10. Impact of GHRM on ECP Mediated by GSCM

To support ECP, the management of GHRM includes policies and practices focused on human resource management that supports environmental sustainability, such as providing employees with opportunities to contribute to operational efficiency and training them in environmentally friendly practices. By incorporating sustainability elements into the supply chain, GSCM can help hospitals reduce operational costs through more efficient management of materials and energy, as well as waste reduction. According to research by Jabbour and De Sousa Jabbour [59] the implementation of GSCM, driven by GHRM policies, not only enhances ENP but also improves ECP by reducing costs and increasing efficiency. Furthermore, research by Sarwar and Shahzad [60] found that hospitals implementing both concepts simultaneously can generate economic benefits, such as reduced energy costs and waste management. Thus, these hospitals become more profitable and competitive.

5.11. Impact of GHRM on SP Mediated by GSCM

GHRM, which integrates ecological goals into human resource management, aims to create environmentally oriented employees. GSCM, as an environmentally friendly strategy, is implemented within the hospital's culture, enhancing

environmental values, beliefs, and attitudes among staff. GSCM can help with more environmentally friendly waste management, more efficient energy use, and improved health and safety at work in the context of SP, thus leading to enhanced quality services for patients and the community, in line with professional ethics and commitment. This research supports the findings of Correia, et al. [61] which show that GSCM is crucial in promoting sustainable social performance through a competitive green culture. Additionally, research by Zaid, et al. [31] also indicates that GSCM plays a positive mediating role in improving social performance, especially when organizations are coordinated within the supply chain involving more stakeholders.

6. Conclusions

This study shows that GHRM and GSCM have a significant impact on TBL performance in hospitals under the Ministry of Health of Indonesia. GHRM positively influences ENP and SP, but not ECP. Meanwhile, GSCM positively affects all dimensions of TBL. Furthermore, GOC moderates the effect of GHRM on ENP, but not on ECP. Additionally, GSCM acts as a mediator that connects GHRM to the improvement of all TBL dimensions. These findings highlight the importance of integrating GHRM, GSCM, and GOC into hospital policies to support TBL sustainability.

6.1. Policy Implications

The Ministry of Health in Indonesia should implement strategic policies that enhance the sustainability of hospital operations by integrating GHRM, GSCM, and GOC to support TBL performance. This approach offers a comprehensive framework for hospitals to achieve sustainable practices across economic, environmental, and social dimensions.

a. **National Training for Healthcare Workers:** The Ministry can develop national training guidelines for healthcare workers focusing on environmentally and socially responsible practices. These guidelines would equip hospital staff with the knowledge and skills to make informed decisions that contribute to sustainability. By raising awareness and encouraging participation, healthcare workers will be better prepared to support sustainability, whether by reducing energy consumption, minimizing waste, or promoting eco-friendly patient care practices.
b. **Adoption of GSCM Practices:** The Ministry should establish policies that encourage hospitals to adopt GSCM practices. These policies could involve regulations or incentives for selecting environmentally friendly suppliers, improving resource efficiency, and implementing innovative waste management systems. By aligning the entire supply chain with sustainability goals, hospitals can reduce their environmental impact and improve operational efficiency.
c. **Establishing GOC in Hospitals:** It is essential to promote the establishment of a GOC within hospitals. The Ministry can support this by embedding sustainability principles into the core values and operational processes of healthcare organizations. This might involve revising hospital policies to include sustainability targets, creating performance metrics related to environmental and social impacts, and fostering a culture that prioritizes sustainability at every organizational level.
d. **Synergy between GHRM and GSCM:** Policies should encourage synergy between GHRM and GSCM by integrating both frameworks into employee and supply chain performance evaluations. For instance, performance appraisals could include sustainability criteria, rewarding employees who contribute to environmental conservation and recognizing supply chain partners who adopt sustainable practices. By aligning these two management areas, the Ministry can accelerate hospitals' progress toward achieving TBL goals.

6.2. Limitations

This study focuses on hospitals under the Ministry of Health of Indonesia, providing valuable insights into the impact of GHRM, GSCM, and GOC on TBL performance. However, there are several limitations that should be considered. One key limitation is that the study does not explore other external factors that could influence hospital performance, such as government policies, regulatory changes, or global health crises like pandemics. These factors may affect the relevance and applicability of the findings in the long term.

6.3. Suggestions for Future Research

Future research could explore the impact of external factors, such as government policies or health crises, on the implementation of GHRM, GSCM, and GOC in hospitals. Future studies could also examine the effect of these factors on TBL performance using a broader approach, including hospitals outside Indonesia to gain a more comprehensive perspective.

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