

Determinants of Corporate Sustainability Performance Through Green Innovation and Organizational Culture

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Abstract

Purpose: This study examines the influence of Green Human Resource Management (GHRM) practices and green work–life balance on Corporate Sustainability Performance (CSP), with green innovation and organizational culture as mediating mechanisms.

Methodology: An explanatory sequential embedded mixed-methods design (QUAN→QUAL) was used. Quantitative data were collected from 206 employees of automotive manufacturing companies in Greater Jakarta, followed by in-depth interviews with eight informants to provide qualitative insights into the quantitative results.

Results: GHRM practices drive green innovation and organizational culture, which enhance corporate sustainability performance, whereas GHRM has no direct effect on CSP. Green work–life balance has a limited effect on CSP and does not significantly influence green innovation or organizational culture.

Conclusions: Sustainability performance requires the integration of GHRM with organizational culture and green innovation. Green work–life balance should also be more closely aligned with organizational sustainability and innovation objectives.

Limitations: This research was conducted in automotive companies in the Jabodetabek area.

Contributions: The results of this study provide a direct contribution to policymakers at the corporate level, particularly manufacturing company management in the Greater Jakarta area, in designing more integrated sustainability strategies.

Keywords: *Corporate Sustainability Performance, Green Human Resource Management, Green Innovation, Green Work–Life Balance, Organizational Culture*

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1. Introduction

The manufacturing sector plays a strategic role in Indonesia's economic development (Nasir & Suripto, 2025). According to data from the Ministry of Industry in 2024, Indonesia contributes approximately 18–19% of the national Gross Domestic Product (GDP), making it one of the main manufacturing hubs in Southeast Asia. Within this sector, the automotive industry is particularly important, with annual four-wheeled vehicle production exceeding 1.3 million units and exports surpassing 470,000 units. However, the scale of manufacturing activity is accompanied by substantial environmental pressures, increasing demands from governments, consumers, and investors for

companies to strengthen Corporate Sustainability Performance (CSP). The transition toward Electric Vehicles (EVs) further intensifies these demands because it requires not only technological transformation but also changes in employee competencies, organizational practices, and production processes. Consequently, sustainability in the automotive industry increasingly depends on an organization's ability to align human resources with environmental objectives.

Green Human Resource Management (GHRM) provides a strategic mechanism for achieving this alignment. GHRM integrates environmental considerations into human resource practices, including green recruitment, environmental training, performance appraisal, rewards, and employee involvement ([Jamshed et al., 2022](#)). In the automotive industry, these practices can support the development of green competencies and behaviors required for energy efficiency, waste reduction, emissions control, and environmentally responsible innovation. Consequently, recent studies have positioned GHRM as an important organizational capability for improving sustainability outcomes ([Aggarwal & Agarwala, 2023](#); [Lin et al., 2024](#); [Saptaria et al., 2026](#); [Sudjaniah et al., 2026](#)). Nevertheless, the effect of GHRM on sustainability performance should not be understood as a direct relationship. GHRM practices may first shape employee behavior, organizational values, and innovation capabilities before these changes are translated into measurable sustainable outcomes.

This perspective highlights the importance of organizational culture and green innovation as potential mechanisms linking GHRM and CSP. Organizational culture determines how environmental values are interpreted, shared, and embedded in everyday organizational behavior, whereas green innovation enables firms to translate environmental objectives into new products, processes, and management practices ([Nisar et al., 2022](#)). Existing evidence suggests that both factors can contribute to sustainability performance, and some studies indicate that organizational culture and green innovation may mediate the relationship between GHRM and CSP ([Ogiemwonyi et al., 2023](#)). However, these mechanisms have generally been examined separately or without sufficiently explaining how GHRM simultaneously develops an environmentally oriented culture and innovation capabilities. Thus, understanding the complementary roles of organizational culture and green innovation is necessary to explain how human resource practices are transformed into sustainability outcomes.

The role of Green Work–Life Balance (Green WLB) provides another dimension that remains insufficiently integrated into this relationship. Green WLB extends the conventional work–life balance perspective by considering whether employees' work arrangements and organizational environments support environmentally responsible lifestyles and behaviors ([Piwowar-Sulej, 2021](#)). Although green WLB has the potential to strengthen employee engagement with organizational environmental objectives, its relationship with CSP is less established than that of GHRM. Existing research has paid comparatively limited attention to whether green WLB stimulates green innovation or contributes to the development of a green organizational culture ([Deshpande & Srivastava, 2022](#)). Therefore, examining green WLB alongside GHRM may provide a broader explanation of how human-resource-oriented sustainability practices influence organizational outcomes in the hospitality industry.

The practical relevance of these issues is evident in the Indonesian automotive sector, where sustainability performance has not always been developed consistently despite increasing attention to ESG initiatives. For example, Astra International Tbk ESG performance increased from 34.96 in 2015 to 58.77 in 2022 but subsequently declined to 53.05 in 2023 and 47.72 in 2024. The decline was particularly visible in the social and governance dimensions, which are closely associated with organizational capabilities, human resources, and internal organizational practices. The core ESG data of Astra International Tbk, comprising Environmental (E), Social (S), and Governance (G) dimensions, are presented in Table 1.

Table 1. ESG, E, S, and G core data for Astra International Tbk

Year	ESG_Score	E_Score	S_Score	G_Score
2015	34.96	26.71	32.38	50.92
2016	31.31	27.42	25.12	47.31
2017	38.49	35.66	39.59	40.82
2018	45.67	43.06	51.37	40.21
2019	41.64	35.70	46.84	41.90
2020	46.74	59.56	39.61	39.54
2021	57.84	67.40	56.08	46.69
2022	58.77	64.67	56.09	54.50
2023	53.05	60.42	51.75	44.38
2024	47.72	59.77	44.70	34.97



Figure 1. Astra International Tbk ESG, E, S & G core graph

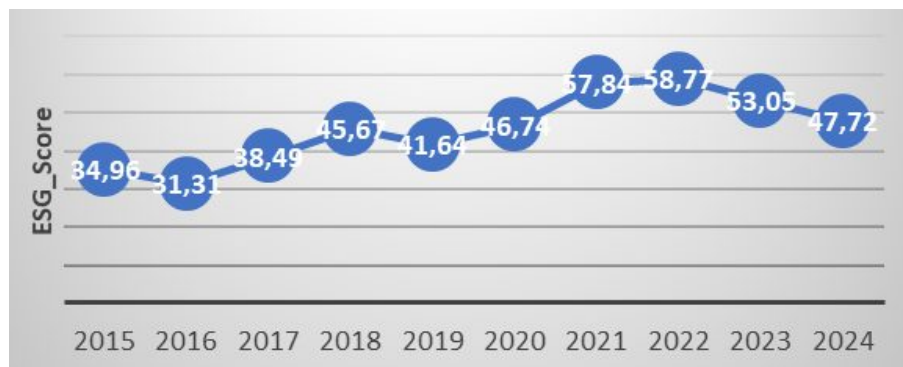


Figure 2. Astra International Tbk ESG graph

Figure 1 & Figure 2 suggests that adopting sustainability policies does not guarantee stable sustainability performance. Rather, sustainability strategies must be embedded within the organizational culture ([Ernawati et al., 2026](#)), employee capabilities, and innovation processes ([Subramanian & Suresh, 2022](#)). Therefore, this phenomenon reinforces the need to examine the organizational mechanisms through which green-oriented human resource practices are translated into sustained sustainability performance ([Fitri et al., 2026](#)). Despite the growing literature on GHRM and sustainability, there are still several gaps. First, a theoretical gap exists regarding the mechanisms through which GHRM contributes to CSP. Much of the literature emphasizes the direct relationship between GHRM and sustainability outcomes, while insufficient attention has been given to the simultaneous mediating roles of green innovation and culture. Previous studies have acknowledged the importance of these variables but have not adequately explained their complementary function in translating human resource practices into sustainability performance ([Fang et al., 2022](#); [Muisyo &](#)

[Qin, 2021](#); [Ogiemwonyi et al., 2023](#)). Therefore, a model that integrates both mechanisms can provide a more comprehensive explanation of the GHRM–CSP relationship.

Second, an empirical gap concerns the limited evidence on green WLB ([Coelho et al., 2024](#)). Although green WLB has been proposed as an important dimension of environmentally oriented employee management, empirical research examining its relationship with CSP remains limited. More importantly, its potential connection with green innovation and organizational culture has not been sufficiently tested. Consequently, it remains unclear whether green WLB is an independent predictor of sustainability performance or whether its influence depends on organizational mechanisms such as culture and innovation.

Third, a contextual gap remains in the Indonesian manufacturing sector, particularly in the automotive industry. Much of the existing evidence has been generated in developed economies and sectors outside automotive manufacturing. The Indonesian automotive industry represents a particularly relevant context because it is simultaneously experiencing rapid technological transformation toward EVs, increasing environmental expectations, and a need to strengthen human capital. However, empirical evidence integrating GHRM, green Work-Life Balance (WLB), green innovation, organizational culture, and Corporate Social Performance (CSP) within this context remains limited.

Fourth, a methodological gap concerns the limited contextual explanation of the quantitative relationships among these variables ([Adu-Yeboah et al., 2022](#); [Anwar et al., 2020](#); [Hoxhaj et al., 2023](#)). Existing studies predominantly rely on quantitative designs, which are useful for testing relationships but may provide limited insight into why certain relationships emerge within organizational settings. Therefore, combining quantitative testing with qualitative exploration can provide a more comprehensive explanation of the mechanisms underlying these relationships. This is particularly relevant when examining organizational culture and employee-oriented practices, the effects of which may depend on the organizational context and behavioral processes.

Based on these gaps, this study develops an integrated model to examine the influence of GHRM practices and green WLB on CSP, with green innovation and organizational culture serving as mediating variables. The model responds directly to the need to move beyond a simple direct-effect perspective and explain how human resource practices are translated into sustainability outcomes through organizational capabilities and cultural mechanisms. In doing so, this study addresses the theoretical gap concerning the mediating mechanisms of GHRM, the empirical gap concerning green Work-Life Balance (WLB), and the contextual gap concerning Indonesian automotive manufacturing. Therefore, this study seeks to answer how GHRM practices and green WLB influence CSP and whether green innovation and organizational culture mediate these relationships.

This study contributes to the literature in three ways. First, it extends GHRM research by integrating green innovation and organizational culture as complementary mediating mechanisms to explain CSP. Second, it expands the sustainability-oriented human resource literature by incorporating green WLB into an integrated model rather than treating it as an isolated employee well-being construct. Third, it provides empirical evidence from Indonesian automotive manufacturing, a context characterized by simultaneous technological transformation and increasing environmental demands. These contributions offer a more comprehensive understanding of how human resource practices can be converted into organizational sustainability capabilities.

To address these objectives, this study employs an explanatory sequential embedded mixed-methods design (QUAN→QUAL). The quantitative phase uses PLS-SEM to test the proposed relationships among GHRM, green WLB, green innovation, organizational culture, and CSP, while the qualitative phase explores the organizational context underlying the quantitative findings. This design enables the study to establish whether the proposed relationships are statistically supported and explain the organizational mechanisms through which green human resource practices contribute to sustainability performance in Indonesian automotive manufacturing.

2. Literature Review and Hypotheses Development

2.1 Corporate Sustainability Performance

Corporate Sustainability Performance (CSP) refers to an organization's ability to integrate and balance economic, social, and environmental objectives to create long-term value ([Dyllick & Hockerts, 2002](#)). The concept has evolved from the corporate social responsibility perspective proposed by [Carroll \(1979\)](#) and the triple bottom line framework of [Elkington \(1997\)](#), which emphasizes economic, social, and environmental dimensions. Empirically, [Ameer and Othman \(2011\)](#) found that companies integrating sustainability into their business models tend to achieve stronger long-term performance, indicating that sustainability can function as a strategic capability rather than merely a compliance obligation. However, sustainability initiatives do not always generate consistent performance outcomes, as their effectiveness depends on how sustainability principles are embedded in the organizational processes and capabilities. This suggests that CSP should not be viewed solely as a direct outcome of sustainability-oriented policies but also as a consequence of organizational mechanisms that translate such policies into employee behavior, innovation, and operational practices.

This perspective highlights the need to examine the organizational factors underlying CSP, particularly in manufacturing industries that face strong environmental and technological pressures. Previous research has increasingly associated CSP with green human resource practices, green innovation, and organizational culture ([Islam, Hack-Polay, Haque, Rahman, & Hossain, 2022](#); [Sahan, Jaaffar, & Osabohien, 2024](#); [Shah, Al-Ghazali, Bhatti, Aman, Fahlevi, Aljuaid, & Hasan, 2023](#); [Ernawati, Kadir, Badrian, Naimah, & Jahra, 2026](#); [Ogiemwonyi, Alam, & Alotaibi, 2023](#); [Fang, Shi, Gao, & Li, 2022](#); [Jamshed, Shah, Al-Ghazali, Majeed, & Jamshaid, 2022](#)). However, these relationships have often been examined independently, leaving a limited understanding of how these mechanisms interact with each other. Consequently, this study extends the CSP literature by positioning green innovation and organizational culture as mediating mechanisms through which Green Human Resource Management (GHRM) practices can contribute to sustainability performance. This integrated perspective is particularly relevant to the Indonesian automotive manufacturing context, where sustainability requires not only environmental policies but also organizational capabilities that encourage green innovation and embed environmental values into everyday practices.

2.2 Green Innovation

Green innovation refers to the development and implementation of products, processes, and managerial practices that reduce environmental impact while creating economic value ([Chen, 2007](#)). It includes green products, processes, and managerial innovation, indicating that environmental innovation extends beyond the development of eco-friendly products to changes in production processes and organizational practices. Empirical evidence suggests that green innovation improves environmental and organizational performance. [Porter and Linde \(1995\)](#) argue that environmental innovation can simultaneously reduce resource inefficiencies and create new business opportunities. Subsequent studies have emphasized their contributions to resource efficiency, pollution reduction, and competitive advantage. However, the benefits of green innovation are not necessarily automatic, as their effectiveness may depend on organizational capabilities, employee involvement, and the extent to which environmental values are embedded in organizational practices. This indicates that green innovation initiatives alone may be insufficient to ensure higher corporate sustainability performance.

Therefore, recent literature increasingly highlights the role of organizational factors in developing green innovation, particularly human resource practices and organizational culture. While previous studies have established positive relationships between green-oriented management practices and innovation outcomes, limited research has simultaneously examined how Green Human Resource Management (GHRM) and organizational culture contribute to green innovation and improve Corporate Sustainability Performance (CSP). This creates an important research gap because GHRM may provide employees with the skills, motivation, and environmental orientation necessary for innovation, whereas the organizational culture can create a context that supports the adoption and diffusion of green ideas. Accordingly, this study extends existing research by positioning green innovation as a mediating mechanism through which GHRM practices influence CSP, while

simultaneously considering organizational culture as an additional mechanism within an integrated sustainability framework.

2.3 Organizational Culture

Organizational culture refers to the shared values, norms, and basic assumptions that shape the way organizational members think and behave ([Schein, 1995](#)). In the sustainability context, organizational culture is important because environmental values need to be embedded in everyday organizational practices rather than merely treated as formal policies. Previous empirical studies have generally indicated that a sustainability-oriented culture can improve environmental performance and support green innovation. [Chang and Lee \(2007\)](#) emphasized the role of organizational culture in shaping organizational effectiveness, while [Lin et al. \(2024\)](#) demonstrated that an environmentally oriented organizational culture can contribute to corporate sustainability performance. Similarly, research on green innovation suggests that a culture supportive of environmental values encourages employees to generate and implement environmentally responsible ideas. These findings indicate a generally positive relationship between organizational culture and sustainability outcomes, although the strength of this relationship may depend on the extent to which environmental values are genuinely internalized within the organization.

Despite these findings, previous research has predominantly examined organizational culture either as an antecedent of sustainability performance or as a contextual factor supporting green innovation, while its mediating role remains less established. In particular, limited research has simultaneously examined whether organizational culture explains the relationship between GHRM practices, green work–life balance, and corporate sustainability. This creates an important research gap because green-oriented HR practices may influence sustainability outcomes only when environmental values are successfully transformed into shared organizational norms and behaviors. Accordingly, this study positions organizational culture as a mediating mechanism to examine whether the internalization of green values helps translate GHRM practices and green work–life balance into improved corporate sustainability performance.

2.4 Green Work-Life Balance

Green Work–Life Balance (green WLB) extends the conventional work–life balance concept by incorporating environmental considerations into employees' work and non-work activities. It reflects organizational efforts to create working conditions that enable employees to balance professional responsibilities, personal well-being, and environmentally responsible behavior ([Piwowar-Sulej, 2021](#)). Examples include flexible work arrangements, environmentally friendly commuting, reduced unnecessary travel and organizational support for sustainable lifestyles. Previous studies suggest that work–life balance practices can improve employee well-being, organizational commitment, and innovative behavior, whereas green-oriented HR practices can strengthen employees' environmental awareness ([He & Wang, 2023](#)). However, empirical research specifically examining green WLB as a determinant of corporate sustainability performance remains relatively limited compared to research on GHRM. This suggests that green WLB may represent an important but underexplored dimension of sustainability-oriented human resource management.

Moreover, the existing literature provides insufficient evidence regarding the mechanisms through which green WLB influences organizational sustainability outcomes. Although supportive green work environments may encourage environmentally responsible employee behavior, such effects may not automatically translate into higher corporate sustainability. Organizational culture and green innovation may determine whether individual-oriented green practices are converted into collective organizational outcomes. Therefore, this study extends previous research by incorporating green WLB into an integrated model with GHRM, green innovation, organizational culture, and corporate sustainability performance. This approach enables the study to examine whether green WLB directly contributes to sustainability performance and whether its potential effects are transmitted through organizational culture and green innovation.

2.5 Green Human Resource Management Practices

Green Human Resource Management (GHRM) practices represent the integration of environmental objectives into conventional HR functions, including recruitment, training, performance appraisal, career development, rewards, and employee involvement (Muisyo & Qin, 2021). The literature generally reports the positive effects of GHRM on environmental and organizational outcomes. Lin et al. (2024) found that GHRM contributes to corporate sustainability performance, and He and Wang (2023) demonstrated that green-oriented HR practices can strengthen employees' environmental competencies and green innovation capabilities. These findings suggest that GHRM can function as a strategic capability by aligning employees' knowledge, motivation, and behavior with organizational environmental objectives. Nevertheless, the positive effects reported in previous studies are not necessarily uniform because the implementation and effectiveness of GHRM may depend on organizational culture, employee engagement, and an organization's capacity to transform green competencies into innovation and operational improvements.

Therefore, the main limitation of the existing literature is not the recognition of GHRM as a sustainability driver but the limited explanation of how GHRM is translated into corporate sustainability performance. Previous studies have often emphasized the direct relationship between GHRM and sustainability outcomes, while the simultaneous roles of organizational culture and green innovation have received less attention in the literature. This study addresses this gap by positioning GHRM as the primary antecedent of corporate sustainability performance and examining green innovation and organizational culture as mediating mechanisms. In this framework, GHRM is conceptualized not merely as a collection of environmentally oriented HR practices but as a strategic capability that develops green competencies, strengthens environmental values, and facilitates innovation, thereby providing a more comprehensive explanation of how human resource practices contribute to corporate sustainability performance. The framework of thinking developed based on the theoretical relationships among the research variables is presented in Figure 3.

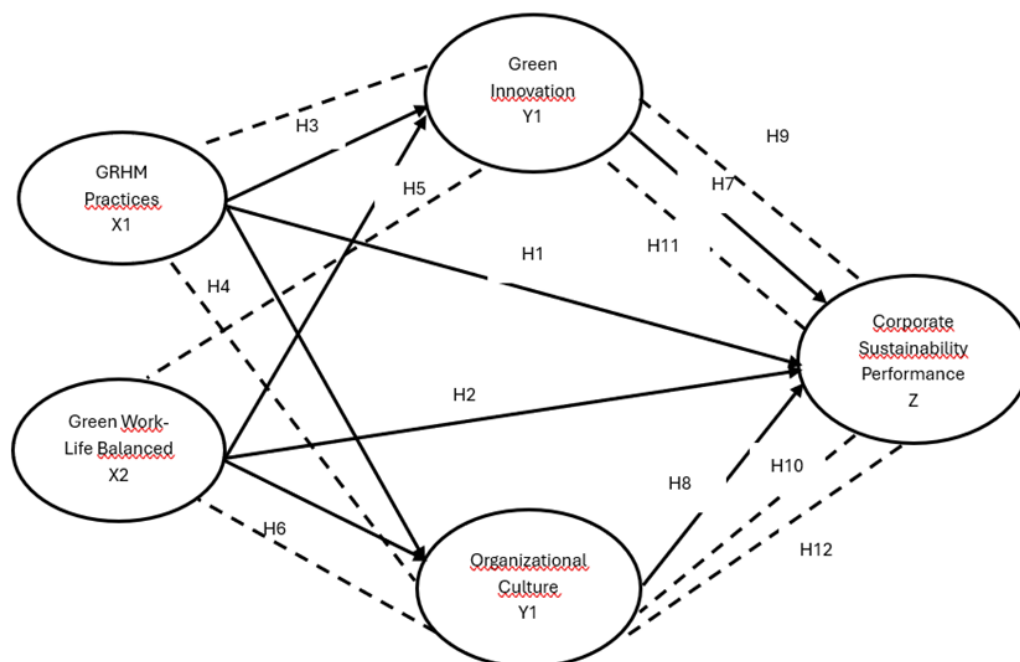


Figure 3. Framework of thinking

The following hypotheses were formulated:

- H_1 : GHRM practices have an impact on corporate sustainability performance
- H_2 : Green work–life balance has an effect on corporate sustainability performance
- H_3 : GHRM practices influence green innovation

- H₄*: GHRM practices influence organizational culture
- H₅*: Green work–life balance influences green innovation
- H₆*: Green work–life balance has an effect on organizational culture
- H₇*: Green innovation has an impact on corporate sustainability performance
- H₈*: Organizational culture influences corporate sustainability performance
- H₉*: GHRM practices influence corporate sustainability performance through green innovation
- H₁₀*: Green work–life balance influences corporate sustainability performance through green innovation
- H₁₁*: GHRM practices influence corporate sustainability performance through organizational culture
- H₁₂*: Green work-life balance influences corporate sustainability performance through organizational culture

3. Research Methodology

This study employed an explanatory sequential embedded mixed-methods design (QUAN → qual), in which the quantitative phase using Partial Least Squares Structural Equation Modeling (PLS-SEM) was conducted first, followed by a qualitative phase to explain the quantitative findings ([Ivankova et al., 2006](#); [Kurtaligi et al., 2024](#)). The quantitative phase examined the relationships among Green Human Resource Management (GHRM), Green Work–Life Balance (GWLB), Green Innovation (GI), Organizational Culture (OC), and Corporate Sustainability Performance (CSP). The qualitative phase was subsequently used to provide contextual explanations for the significant, insignificant, and mediating relationships identified in the PLS-SEM results.

The study was conducted among employees of motorcycle manufacturing companies operating in Greater Jakarta (*Jabodetabek*), Indonesia. The population consisted of employees directly or indirectly involved in organizational activities related to human resource management, environmental practices, production, and sustainability. Respondents were selected using purposive sampling based on the following criteria: (1) employees had worked for the company for at least one year, (2) respondents understood the organization's HR and environmental practices, and (3) respondents were involved in or exposed to organizational activities related to sustainability. A total of 206 valid questionnaires were obtained after data quality screening and were used in the quantitative analysis. The respondents represented different organizational positions, allowing the study to capture variations in the perceptions of GHRM, GWLB, organizational culture, green innovation, and sustainability performance.

Data were collected using a structured questionnaire developed from previously validated constructs in the literature. GHRM was measured using environmentally oriented HR practices, including green recruitment, environmental training, green performance appraisal, and green rewards. GWLB captures organizational support that enables employees to balance work, personal well-being, and environmentally responsible activities. Green innovation measures an organization's ability to develop and implement environmentally oriented products, processes, and managerial practices, while organizational culture measures shared environmental values, norms, and practices. CSP was assessed through the economic, social, and environmental performance dimensions. All items were measured using a Likert-type scale, and the questionnaire was reviewed for clarity and contextual relevance prior to distribution.

Quantitative analysis was conducted using PLS-SEM because the proposed model contains multiple direct and indirect relationships and includes mediation effects. The assessment consisted of two stages. First, the measurement model was evaluated using indicator loadings, internal consistency reliability, convergent validity, and discriminant validity. Reliability was assessed using Cronbach's alpha and composite reliability, while convergent validity was evaluated using the Average Variance Extracted (AVE). Discriminant validity was examined using appropriate criteria. Second, the

structural model was assessed through path coefficients, the coefficient of determination (R^2), effect size (f^2), predictive relevance, and bootstrapping to determine the significance of direct and indirect effects. The mediation hypotheses were evaluated based on the significance of the corresponding indirect effects.

Following the quantitative analysis, eight informants were purposively selected for the qualitative phase based on their organizational roles and ability to provide relevant information about the quantitative findings. The informants represented different organizational levels, including Human Resource (HR) managers, line supervisors, and operational employees. Semi-structured interviews were conducted to explore how GHRM and GWLB practices were implemented, how environmental values were embedded in the organizational culture, and how these practices supported or constrained green innovation and sustainability performance. The interview questions were developed based on the key quantitative relationships, particularly the significant, insignificant, and mediation pathways identified through PLS-SEM.

The interviews were conducted using an interview guide and were documented through recordings and field notes with the participants' consent. Qualitative data were transcribed and analyzed using thematic analysis. The analysis involved familiarization with the data, initial coding, categorization of related codes, identification of themes, and interpretation of the relationships among the themes. Abductive reasoning was used to connect the emerging empirical patterns with the quantitative results and theoretical framework. Negative cases were considered when qualitative evidence contradicted or provided alternative explanations for the quantitative findings. The qualitative interpretation was strengthened through source triangulation across different organizational positions, an audit trail of the analytical process, and member checking to confirm the accuracy of the key interpretations.

Finally, the quantitative and qualitative findings were integrated using a joint-display approach. Qualitative evidence was mapped against the PLS-SEM results to explain why particular relationships were supported or unsupported and how organizational conditions influenced the observed relationships. This integration enabled the study to move beyond statistical associations by providing contextual explanations of the mechanisms through which GHRM and GWLB influence CSP via green innovation and organizational culture. The integrated findings were subsequently used to formulate theoretical interpretations and practical implications for sustainability-oriented human resource management in the motorcycle manufacturing industry.

4. Results and Discussions

4.1 Result

This study obtained 247 questionnaires, and data quality screening was performed on careless answering patterns using the longstring index, which is the length of a series of consecutive identical answers. Respondents who gave a series of identical answers of 30 or more items in a row from 47 instruments had a strong indication of straight-lining behavior and were excluded from the analysis, namely 41 respondents. After a long screening process, the final analysis was performed on 206 respondents ($N = 206$). The following is a summary of the results of the analysis of the direct and indirect influence test of the hypothesis

Table 2. Hypothesis testing results

Hypothesis	Hypothesis Statement	β	p-value	Information
H_1	GHRM Practices $\rightarrow$ Corporate Sustainability Performance	0.017	0.671	Rejected
H_2	Green Work–Life Balance $\rightarrow$ Corporate Sustainability Performance	0.071	0.018	Accepted
H_3	GHRM Practices $\rightarrow$ Green Innovation	0.703	< 0.001	Accepted
H_4	GHRM Practices $\rightarrow$ Organizational Culture	0.720	< 0.001	Accepted
H_5	Green Work–Life Balance $\rightarrow$ Green Innovation	0.088	0.121	Rejected

Hypothesis	Hypothesis Statement	β	p-value	Information
H_6	Green Work–Life Balance $\rightarrow$ Organizational Culture	0.091	0.073	Rejected
H_7	Green Innovation $\rightarrow$ Corporate Sustainability Performance	0.462	< 0.001	Accepted
H_8	Organizational Culture $\rightarrow$ Corporate Sustainability Performance	0.436	< 0.001	Accepted
H_9	GHRM $\rightarrow$ Green Innovation $\rightarrow$ CSP	0.325	< 0.001	Accepted
H_{10}	GWLB $\rightarrow$ Green Innovation $\rightarrow$ CSP	0.040	0.132	Rejected
H_{11}	GHRM $\rightarrow$ Organizational Culture $\rightarrow$ CSP	0.314	< 0.001	Accepted
H_{12}	GWLB $\rightarrow$ Organizational Culture $\rightarrow$ CSP	0.040	0.103	Rejected

Table 2 shows that seven hypotheses were accepted and five were rejected. GHRM Practices do not have a direct effect on CSP but have a strong influence on Green Innovation and Organizational Culture. Green Innovation and Organizational Culture also positively affect CSP. Meanwhile, GWLB has only a direct and weak effect on CSP and has no effect on Green Innovation or Organizational Culture. In the mediation effect, Green Innovation and Organizational Culture were shown to mediate the influence of GHRM on CSP, while neither mediated the influence of GWLB on CSP. These findings confirm that GHRM is a key driver of CSP through green innovation mechanisms and organizational culture, whereas GWLB's contribution is still limited.

Furthermore, qualitative analysis was conducted to elaborate, explain, and retest the quantitative findings of PLS-SEM through the voices of actors in the field. This study uses a sequential explanatory approach (quantitative first, then qualitative), with an interface point (point of interface) determined after estimating the measurement, structural, and IPMA models. The qualitative analysis follows a thematic–abductive approach with the Gioia framework combined with [Braun and Clarke \(2019\)](#) six stages, so that the traceability and transparency of the process are maintained.

Table 3. In-depth interview informant profile

Code	Role	Unit	Tenure	Interview Focus
INF-01	Top Management / VP Manufacturing and Sustainability	Jabodetabek head office and plant coordination	More than 12 years	Sustainability strategy, leadership commitment, IPMA priorities
INF-02	HR Manager Business Partner Plant	Bekasi–Tangerang automotive component plant	8 years	GHRM practice, training, appraisal, reward, policy-to-practice gap
INF-03	Production Manager / Plant Operations Manager	Two-wheeled and four-wheeled component production line	10 years	Output pressure, process efficiency, line culture, operation-based innovation
INF-04	Supervisor / Operational Coordinator	Shift area assembly and finishing	6 years	Bridge policy–operations, employee acceptance, 5R discipline
INF-05	Production Staff / Senior Operator	Operator senior area assembly	5 years	Daily experience, GWLB perception of justice, actual green practices
INF-06	Functional Employees R&D / QA Engineer	R&D, QA, and improvement proses	7 years	Green innovation, technical data, HR competence, technological limitations
INF-07	EHS / Sustainability Officer	K3L function, environment, and compliance	9 years	Compliance, certification-centric trap, OC–GI–CSP proximity, triangulation

Code	Role	Unit	Tenure	Interview Focus
INF-08	Finance / ESG Reporting and Business Development	Finance, ESG reporting, business development	6,5 years	CSP standards and policies, ROI, financial trade-offs, ESG data

Table 3 shows that the eight informants cover all levels of the organization that are strategically and operationally relevant: from the top leadership that determines the direction of sustainability (INF-01), the HR function of the policy designer (INF-02), the production and supervision ranks that implement the policy (INF-03, INF-04), the implementers on the line (INF-05), to the specific support functions, R&D/QA for innovation (INF-06), EHS for compliance and the environment (INF-07), and finance for the economic dimension and ESG reporting (INF-08). This cross-functional composition provides sufficient information to explain the causal pathways in the model and, importantly, to examine insignificant findings from different perspectives.

Table 4. Quantitative–qualitative integration joint display

Hypothesis	Quantitative Findings	Qualitative Themes	Representative Quotes	Integrative Interpretation
H_3 & H_4 : GHRM $\rightarrow$ GI; GHRM $\rightarrow$ OC	Accepted ($\beta=0.703$ & 0.720 ; $p < 0.001$)	GHRM as capability building	<i>“GHRM provides inputs in the form of competencies, motivation, and opportunity structures. The GI is an operational mechanism. OC is a social environment that makes people dare to try.”</i> INF-06 (R&D/QA)	Confirmation
H_7 & H_8 : GI $\rightarrow$ CSP; OC $\rightarrow$ CSP	Accepted ($\beta=0.462$ & 0.436 ; $p < 0.001$)	GI as a liaison; Culture of Consistency	<i>“Policies do not produce results, behaviors, and processes that produce results... Once the training makes the operator understand waste, the supervisor pushes the kaizen, then the CSP is seen through the scrap down, the energy goes down.”</i> INF-03 (Production Manager)	Confirmation
H_1 : GHRM $\rightarrow$ CSP (direct); H_9 & H_{11} (mediation)	H_1 Rejected ($\beta=0.017$; $p=0.671$); H_9 & H_{11} Accepted ($p < 0.001$)	Policy-to-practice gap $\rightarrow$ full mediation	<i>“HR policy is input. The impact on sustainability is not immediately visible because of training or SOPs. It must change into a work culture and process innovation. I am not surprised that the direct line is weak.”</i> INF-01 (Top Management)	Explanation (full mediation)
H_2 : GWLB $\rightarrow$ CSP (direct)	Accepted, weak ($\beta=0.071$; $p=0.018$)	GWLB as welfare/working conditions	<i>“A humane schedule can reduce attendance, turnover, accidents, and work errors.”</i> INF-08 (Finance/ESG)	Partial confirmation
H_5 , H_6 , H_{10} , H_{12} : path GWLB $\rightarrow$ GI/OC and mediation	Rejected ($p > 0.05$)	GWLB is not yet an innovation system	<i>“Our GWLB is still mostly in the welfare area, not an innovation system... It needs to translate into protected time for improvement, not just administrative flexibility.”</i> INF-02 (HR) and INF-06 (R&D)	Explanation (GWLB design has not led to innovation)

Hypothesis	Quantitative Findings	Qualitative Themes	Representative Quotes	Integrative Interpretation
OC–GI–CSP (discriminant validity & CMB) proximity	VIF is close to 5	Overlapping OC–GI–CSP practices	<i>“I see OC, GI, and CSP overlapping in practice... If the three are statistically very close, I am not surprised. Conceptually they remain different, but on the field they run together.”</i> INF-07 (EHS/Sustainability)	Explanations and challenges (document triangulation required)

Table 4 shows the strong convergence between the quantitative and qualitative findings. For significant pathways (H_3 , H_4 , H_7 , and H_8), informant narratives confirm a measurable mechanism: GHRM builds competencies and opportunities, which then translates into process and work culture innovation, which then leads to sustainability performance improvements. On the insignificant path, qualitative provides a substantive explanation, not merely a numerical decoration.

4.2 Discussion

4.2.1 The Impact of GHRM Practices on Corporate Sustainability Performance

GHRM practices do not have a significant direct effect on corporate sustainability performance, leading to the rejection of H_1 . This finding contrasts with those of previous studies that reported a positive direct relationship between GHRM and CSP (Islam et al., 2022; Nson, 2024; Sahan et al., 2024; Shah et al., 2023). This difference suggests that the effect of GHRM is context-dependent and may not be immediately translated into sustainability outcomes. From a resource-based perspective, GHRM provides human capital and organizational capabilities; however, these resources must first be converted into organizational routines and innovation before generating measurable performance outcomes. The qualitative findings support this interpretation. INF-01 explained that HR policy is an input that must be transformed into work culture and process innovation: Importantly, the total effect of GHRM on CSP remains strong because its influence operates through green innovation and organizational culture. Thus, the insignificant direct effect does not indicate that GHRM is ineffective; rather, it indicates that GHRM functions primarily as an upstream capability, whose sustainability value is realized through organizational mechanisms. This finding extends previous GHRM research by demonstrating that the direct GHRM–CSP relationship may disappear when the mediating mechanisms are explicitly incorporated into the model.

4.2.2 The Impact of Green Work–Life Balance on Corporate Sustainability Performance

Green Work–Life Balance has a significant but weak positive effect on CSP, supporting H_2 . This result is consistent with previous studies associating work–life balance with sustainable organizational outcomes (Adekoya, 2022; Akpa et al., 2022; Al-Hussaini et al., 2019; Setyaningrum et al., 2024). However, the relatively small effect indicates that green WLB differs from GHRM. While GHRM directly develops organizational capabilities, Green Work–Life Balance (WLB) primarily influences employee well-being and working conditions. Qualitative evidence supports this mechanism, with INF-08 noting that humane work schedules can reduce absenteeism, turnover, accidents, and work errors. Therefore, this finding provides a theoretical qualification to the assumption that employee-oriented green practices necessarily generate broad sustainability transformations. In this context, green WLB contributes mainly through the social and economic dimensions of sustainability, particularly employee welfare and operational stability rather than through innovation or cultural transformation. This explains why its direct contribution to CSP is significant but limited in scope.

4.2.3 The Influence of GHRM Practices on Green Innovation

GHRM has a strong positive effect on green innovation, thereby supporting H_3 . This finding is consistent with Camisón and Villar-López (2014) and previous GHRM–green innovation studies (Al Doghan et al., 2022; Maskuroh et al., 2023; Muisyo & Qin, 2021; Singh et al., 2020). The results support the ability-motivation-opportunity logic: recruitment and training develop green capabilities, performance evaluation and rewards provide motivation, and employee involvement creates opportunities to generate environmental improvements. Qualitative evidence supports this

interpretation. INF-06 described GHRM as the input that provides competencies, while INF-03 explained that kaizen training increases operators' confidence in proposing improvement ideas. Thus, GHRM not only promotes environmental awareness but also creates the human capital required to convert environmental objectives into concrete innovations. This strong relationship also explains why green innovation is an important pathway through which GHRM contributes to CSP.

4.2.4 The Influence of GHRM Practices on Organizational Culture

GHRM has a strong positive effect on organizational culture, supporting H_4 and confirming the findings of Al ([Al, Abdelwahed, Soomro, & Ali, 2022](#); [Maskuroh, Widyanty, Nurhidajat, Wardhana, & Fahlevi, 2023](#); [Muisyo, & Qin, 2021](#); [Singh, Giudice, Chierici, & Graziano, 2020](#)). This finding is theoretically consistent with the view that HR practices are important instruments for institutionalizing organizational values. Recruitment, training, appraisal, and rewards repeatedly communicate which behaviors the organization values and can therefore transform environmental principles into shared norms. The qualitative findings demonstrate this process through leadership decisions, daily briefings, 5R practices, audits and reward systems. INF-02 described culture as being built through “*small repetitions and consistent actions*.” This suggests that GHRM contributes to sustainability not only by developing employee competencies but also by creating a social environment in which green behavior is normalized. Consequently, organizational culture represents the social mechanism through which GHRM influences sustainability performance.

4.2.5 The Influence of Green Work–Life Balance on Green Innovation

Green Work–Life Balance does not significantly influence green innovation, leading to the rejection of H_5 . This finding differs from those of studies suggesting that work–life balance and reduced employee stress can support creativity and innovation ([Akpa et al., 2022](#); [Gechbaia et al., 2023](#); [Vasa & Sowdamini, 2017](#)). This discrepancy is theoretically important because it indicates that employee well-being alone does not constitute innovation capability. Green innovation requires not only sufficient employee resources but also organizational mechanisms that channel these resources into experimentation and problem-solving. Qualitative evidence explains this boundary condition. INF-02 stated that GWLB remains largely a welfare practice rather than an innovation system, while INF-06 emphasized the need for dedicated development time. Thus, green WLB may create favorable conditions for employees, but without innovation forums, experimentation time, or structured improvement mechanisms, these conditions do not necessarily produce green innovation. The rejection of H_5 extends the previous literature by identifying the organizational infrastructure required for green WLB to influence innovation.

4.2.6 The Influence of Green Work–Life Balance on Organizational Culture

Green Work–Life Balance does not significantly influence organizational culture, leading to the rejection of H_6 . This result differs from those of studies that associate work–life balance practices with organizational culture ([Deshpande & Srivastava, 2022](#); [Iddagoda et al., 2021](#)). This finding suggests that practices designed to improve individual work conditions do not automatically become shared organizational values. Organizational culture requires repeated collective experiences and consistent organizational signals, whereas green WLB may remain an individual-level benefit. Qualitative findings further indicate that unequal access to GWLB between office employees and operators may weaken its capacity to create shared values. INF-04 and INF-05 highlighted the differences in access across organizational levels. This finding provides a theoretical explanation for the rejected hypothesis: the cultural effect of the GWLB depends on perceived fairness and collective internalization. In contrast, GHRM has a stronger cultural influence because recruitment, training, appraisal, and rewards are implemented as organization-wide management mechanisms.

4.2.7 The Impact of Green Innovation on Corporate Sustainability Performance

Green innovation positively affects CSP, supporting H_7 and confirming the findings of ([Adu-Yeboah, Jiang, Frempong, Hossin, & Amoako, 2022](#); [Ding, & Li, 2023](#); [Frempong, Mu, Adu-Yeboah, Hossin, & Adu-Gyamfi, 2021](#); [Xie, & Zhu, 2020](#)). This result supports the Porter hypothesis, which proposes that environmental innovation can simultaneously improve environmental performance and operational efficiency ([Porter & Linde, 1995](#)). In the present context, green innovation provides a

direct mechanism through which environmental objectives are converted into measurable, organizational outcomes. The qualitative findings illustrate this mechanism through reduced production scrap, improved compressor energy efficiency, process optimization, and digital inspection. These practices simultaneously reduce costs, environmental impact, and production burden. Thus, green innovation functions as a technical-operational mechanism for sustainability, complementing organizational culture as a social mechanism. This dual mechanism helps explain why GHRM can generate sustainability outcomes, even when its direct relationship with CSP is insignificant.

4.2.8 The Influence of Organizational Culture on Corporate Sustainability Performance

Organizational culture has a positive effect on CSP, supporting H_8 and reinforcing the findings of ([Hassanein, Daouk, Yassine, Elsayed, & Saleh, 2024](#); [Linnenluecke, & Griffiths, 2010](#)). The result supports [Schein \(1995\)](#) perspective that shared values and assumptions shape organizational behavior and decision-making. When environmental values are embedded in an organization's culture, sustainability is more likely to be consistently reflected in everyday activities rather than being dependent on formal monitoring. The qualitative findings demonstrate this through leadership consistency, 5S practices, and employees' willingness to report environmental problems. INF-07 noted that green culture is visible in supervisors' consistent decisions, including correcting improper waste practices, even in the absence of audits. Thus, organizational culture functions as a social-institutional mechanism that sustains green behavior beyond formal GHRM interventions.

4.2.9 The Mediating Role of Green Innovation in the Influence of GHRM on CSP

Green innovation significantly mediated the relationship between GHRM and CSP, supporting H_9 . Because the direct GHRM–CSP relationship is insignificant, the result indicates a full mediation. This finding is consistent with previous mediation studies [Aftab, Abid, Cucari, and Savastano \(2022\)](#); [Widyanty, Oktasari, Riyanto, Nusraningrum, Damayanti, Sumaedi, Bakti, Dinaseviani, Prasetya, and Fahlevi \(2024\)](#) and provides stronger evidence that the sustainability value of GHRM is realized when employee capabilities are converted to environmental innovation. Theoretically, this finding shifts the interpretation of GHRM from a direct sustainability driver to an enabling capability. INF-06 explained that sustainability outcomes emerge after employee competencies are used to change the product design, production processes, or measurement systems. Thus, green innovation represents the operational pathway through which the human capital generated by GHRM becomes measurable sustainability performance.

4.2.10 The Mediating Role of Green Innovation in the Effect of GWLB on CSP

Green innovation does not mediate the relationship between GWLB and CSP, leading to the rejection of H_{10} . This result is consistent with the insignificant GWLB–green innovation relationship and differs from the expectation that improved work–life conditions automatically stimulate innovation ([Gechbaia et al., 2023](#)). Theoretically, this finding demonstrates that well-being and innovation are distinct organizational outcomes; providing flexibility or reducing work-related strain does not necessarily create the structures needed for employees to generate green innovations. Qualitative evidence reinforces this interpretation. GWLB would need to include dedicated time for development, experimentation, and Kaizen activities before it could become an innovation mechanism. Therefore, the absence of mediation does not imply that GWLB is irrelevant to sustainability; rather, it indicates that its current implementation is insufficiently connected to the organizational processes required to produce innovations.

4.2.11 The Mediating Role of Organizational Culture in the Influence of GHRM on CSP

Organizational culture significantly mediates the relationship between GHRM and CSP, supporting H_{11} and aligning with previous studies that emphasize the role of green organizational culture as a sustainability mechanism ([Altassan, 2024](#); [Deshpande & Srivastava, 2022](#); [Shafaei et al., 2020](#)). Together with H_9 , this finding demonstrates that GHRM contributes to CSP through two complementary pathways: green innovation as an operational mechanism and organizational culture as a social one. Qualitative evidence supports this theoretical interpretation. Consistent leadership, training, and environmental routines create shared green values, which encourage employees to

experiment with and adopt sustainable work practices. Consequently, the findings extend prior research by showing that the mediating mechanisms of GHRM are not mutually exclusive; rather, cultural internalization and innovation capability jointly translate HR practices into sustainable outcomes.

4.2.12 The Mediating Role of Organizational Culture in the Influence of GWLB on CSP

Organizational culture does not mediate the relationship between GWLB and CSP, leading to the rejection of H_{12} . This result differs from previous arguments suggesting that work–life balance practices influence organizational culture ([Deshpande & Srivastava, 2022](#)). More importantly, the findings demonstrate that a practice directed primarily toward employee welfare does not necessarily become a shared organizational value. Cultural effects require organization-wide implementation, fairness, and explicit connections to sustainability norms. Qualitative evidence indicates that unequal access to GWLB at different organizational levels limits its potential to create shared cultural meanings. This finding explains why GWLB has a weak direct contribution to CSP but fails to operate through green innovation or organizational culture. Theoretically, this study establishes an important boundary condition: green WLB contributes to sustainability primarily when it is deliberately designed as an organizational sustainability mechanism rather than being implemented only as an employee welfare practice.

4.3 Theoretical Interpretation

Taken together, these findings reveal an asymmetric structure in the proposed model. GHRM is the principal antecedent of both green innovation and organizational culture, while green innovation and organizational culture are the principal mechanisms that translate GHRM into CSP. In contrast, green WLB has only a limited direct contribution to CSP and does not significantly influence green innovation or the organizational culture. This distinction provides an important theoretical contribution: not all green-oriented HR practices operate through the same sustainability mechanisms. Therefore, the findings extend the GHRM literature by distinguishing between capability-building HR practices and employee welfare-oriented practices. GHRM functions as a strategic capability because it directly develops innovation capacity and embeds environmental values, whereas GWLB requires additional organizational structures before generating comparable effects. The integrated quantitative and qualitative evidence consequently suggests that achieving CSP depends not simply on adopting green HR policies but on the organization's ability to convert those policies into green capabilities, shared cultural values, and operational innovation.

5. Conclusions

5.1 Conclusion

This study concludes that GHRM practices contribute to corporate sustainability performance primarily through green innovation and organizational culture rather than through direct effects. Green innovation functions as an operational mechanism that transforms green human resource capabilities into sustainable products, processes, and practices. Organizational culture functions as a social mechanism that embeds environmental values into organizational behavior. In contrast, Green Life Balance provides only a limited direct contribution to sustainability performance and does not significantly drive green innovation or organizational culture. These findings extend the GHRM literature by demonstrating that sustainability outcomes depend on the organizational mechanisms through which green HR practices are translated into innovation and shared environmental values. Therefore, manufacturing companies should integrate GHRM with green innovation initiatives, an environmentally oriented organizational culture, and strategically designed Green Work–Life Balance programs to strengthen long-term economic, social, and environmental performance.

5.2 Research Limitations

The limitations of this study lie in its scope, which only covered automotive companies in the Greater Jakarta area of Indonesia, making the results unable to be generalized to other sectors or regions. Furthermore, the research design was cross-sectional, and thus incapable of capturing causal dynamics in greater depth. The Green Work-Life Balance instrument still requires refinement to ensure the consistent and reliable measurement of all its dimensions.

5.3 Suggestions and Directions for Future Research

Future research is recommended to address issues of discriminant validity and common method bias by separating the source or time of measurement, adding marker variables, and clarifying conceptual and wording differences in OC, GI, and CSP items, or modeling them as higher-order constructs. The Green Work–Life Balance instrument also needs to be refined so that all its dimensions, including managerial ecological awareness and ecologically based stress reduction, can be measured consistently and reliably. Future research should be expanded to other industrial sectors and regions to test the generalizability of the findings more broadly and examine moderating variables or boundary conditions, such as production target pressure, audit certification regimes, and internal incentive structures identified in the qualitative findings.

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Author Contributions

All authors made substantial contributions to the conception and design of this study. DK was responsible for the conceptualization, methodology, data collection, formal analysis, and drafting of the manuscript. SW contributed to the supervision, validation, critical review, and editing of the manuscript. DR contributed to data collection and the revision of the manuscript. All authors have read and approved the final version of this manuscript.

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