Scopus
sciendo
Contents lists available at Scopus
ECONOMICS - Innovative and Economics Research Journal
Journal homepage: www.economicsrs.com

GREEN HRM AS A MEDIATOR: STRATEGIC MANAGEMENT ACCOUNTING AND ENVIRONMENTAL PERFORMANCE IN THE JORDANIAN INDUSTRY

Munther Al-Nimer[1]

Received 15.12.2024. | Sent to review 28.02.2025. | Accepted 16.05.2025.

Original article

[1] Accounting Department of Accounting Business School The Hashemite University Zarqa, Jordan

*Corresponding Author:
Dr. Munther Al-Nimer

Email:
dr.muntheralnimer@gmail.com

JEL Classification:
O15, Q56, M41

Doi: 10.2478/eoik-2025-0053

UDK: 330.331.3:502.131.1(569.5)

ABSTRACT

Amid escalating global environmental pressures, this study examines how Strategic Management Accounting Practices (SMAPs) enhance environmental performance in Jordan's industrial sector. Green Human Resource Management (GHRM) serves as a crucial mediator. Drawing on contingency theory, we propose that SMAPs—including environmental cost analysis and lifecycle budgeting—require complementary GHRM mechanisms to transform technical accounting data into sustainable outcomes. Data from 180 professionals across 53 manufacturing firms, analysed via Smart PLS-SEM, reveal that GHRM fully mediates the relationship between SMAPs and environmental performance. Green policy alignment emerged as the most influential mediator, while diminishing returns in green adaptability and employee involvement at lower levels of SMAP adoption suggest threshold effects. This study advances contingency theory by empirically validating GHRM's role as a sociotechnical bridge between accounting systems and ecological outcomes. For practitioners, the results necessitate the integration of SMAPs with targeted HR interventions, such as sustainability-linked training and cross-functional green teams. This alignment enhances compliance and operational efficiency for Jordan—a water-scarce economy facing stringent environmental regulations. While the use of cross-sectional data and perceptual measures limits causal claims, this research provides a validated framework for emerging economies. Future studies should employ longitudinal designs to assess GHRM's evolving impact during sustainability transitions and explore cultural moderators in Arab collectivist contexts. Overall, this work bridges environmental accounting and HRM scholarship, demonstrating that technical systems require human-centric mechanisms to operationalise sustainability.

Keywords: *Environmental Sustainability, Strategic Management Accounting Practices, Green Human Resource Management, Contingency Theory, Jordanian Industrial Sector*

1. INTRODUCTION

Escalating environmental degradation has elevated Sustainability to a strategic priority for industries worldwide. This imperative is driven by the urgent need to mitigate ecological harm while maintaining economic viability, a challenge intensified by regulatory pressures and shifting stakeholder expectations (Kagzi et al., 2024; Bebbington & Unerman, 2018; Schaltegger

et al., 2017). Developing economies such as Jordan face acute sustainability challenges due to resource-intensive industrial activities in the manufacturing, mining, and energy sectors. These industries strain limited natural resources, particularly water and energy, while contributing disproportionately to pollution and carbon emissions (Al-Abdallah, 2021; Al-Shaer & Zaman, 2018). Jordan's arid climate, rapid urbanisation, and population growth further exacerbate these pressures, making environmental Sustainability a critical determinant of industrial resilience (Abdallah & Al-Ghwayeen, 2020; Rawashdeh, 2018; Paillé et al., 2020).

Strategic Management Accounting Practices (SMAPs) provide firms with tools to integrate Sustainability into decision-making, including environmental cost analysis, lifecycle budgeting, and sustainability performance measurement (Ojra et al., 2021; Nik Abdullah et al., 2022; Burritt & Schaltegger, 2010; Christ & Burritt, 2013). However, the effectiveness of SMAPs in driving environmental outcomes remains inconsistent, particularly in developing economies where organisational capabilities and resource constraints limit implementation (Majuri & Halonen, 2020; Gond et al., 2012; Latan et al., 2018). This study proposes Green Human Resource Management (GHRM) as a critical mediator to address this gap. GHRM—encompassing green recruitment, environmental training, and sustainability-linked incentives—directly aligns employee competencies and behaviours with ecological objectives, offering a targeted mechanism to operationalise SMAPs (Sun et al., 2024; Renwick et al., 2013; Yusliza et al., 2017).

In Jordan's industrial sector, GHRM holds particular promise. Firms operate under stringent environmental regulations and resource scarcity, yet often lack the human capital to translate accounting data into actionable strategies (Abu Afifa & Saleh, 2021; Jabbour & Jabbour, 2016; Rawashdeh, 2018). For instance, environmental training enhances employees' ability to interpret cost-benefit analyses of sustainable technologies, while green performance metrics incentivise waste reduction and energy efficiency (Sun et al., 2024; Paillé et al., 2014; Guerci et al., 2016). By bridging the gap between technical accounting systems and on-the-ground execution, GHRM enables firms to achieve compliance, reduce operational risks, and capitalise on sustainability-driven market opportunities (Ren et al., 2018; Al Hashem & Al Shaar, 2022; He et al., 2024; O'Donohue & Torugsa, 2016).

This study investigates how GHRM mediates the relationship between SMAPs and environmental sustainability performance in Jordanian industrial firms. Its contributions are threefold. First, it advances theoretical models of sustainability accounting by empirically testing and extending contingency theory (Chenhall, 2003; Otley, 2016). Specifically, we test the theoretical proposition that GHRM serves as a critical contingency factor mediating the effectiveness of SMAPs, offering a more precise and actionable framework than prior studies focused on broader organisational factors (Bade et al., 2024; Latan et al., 2018; Wijethilake, 2017). Second, it provides empirical insights into sustainability challenges in a Middle Eastern context, a region underrepresented in environmental management research. Third, it offers practical guidance for firms that align accounting systems with human resource strategies to achieve ecological and economic objectives.

The study's primary theoretical contribution lies in testing and validating the application of contingency theory to sustainability accounting by demonstrating that the relationship between SMAPs and environmental performance is contingent upon GHRM practices. This extends contingency theory beyond its traditional focus on external factors by empirically verifying that internal organisational capabilities—particularly human resource practices (Renwick et al., 2013; Dumont et al., 2017)—are essential contingent variables that determine when and how sustainability accounting mechanisms translate to tangible environmental improvements (Wijethilake et al., 2018; Latan et al., 2018).

2. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

2. 1. THEORETICAL FRAMEWORK: CONTINGENCY THEORY

Contingency theory posits that organisational success depends on aligning practices with contextual variables such as regulatory environments, resource availability, and workforce capabilities (Chenhall, 2003; Otley, 2016). In Jordan's resource-constrained industrial sector, GHRM serves as a pivotal contingency factor, ensuring SMAPs adapt to local operational realities (Bade et al., 2024; Latan et al., 2018; Wijethilake, 2017). For instance, green recruitment strategies prioritise hiring employees with sustainability expertise, addressing skill gaps that hinder SMAP implementation (Renwick et al., 2013; Dumont et al., 2017).

Empirical studies affirm that SMAPs yield optimal environmental outcomes when paired with GHRM practices tailored to workforce readiness. Wijethilake et al. (2018) demonstrated that firms combining life-cycle costing with green training achieved 30% faster adoption of eco-innovations. Similarly, Latan et al. (2018) found that performance-based green incentives strengthened employee commitment to sustainability metrics, reducing deviations from environmental budgets. This theoretical alignment underscores GHRM's role as a linchpin, connecting technical accounting systems to tangible ecological improvements in Jordanian industries.

2. 2. SMAPS AND ENVIRONMENTAL SUSTAINABILITY

Strategic Management Accounting Practices (SMAPs) integrate financial and non-financial data to align organisational strategies with environmental sustainability goals (Cadez & Guilding, 2008; Wijethilake et al., 2018; Dang et al., 2021; Nik Abdullah et al., 2022). Key practices—such as lifecycle costing, environmental budgeting, and sustainability performance measurement—enable firms to quantify ecological impacts and allocate resources efficiently (Appiagyei & Donkor, 2024; Burritt et al., 2002; Schaltegger et al., 2017). Empirical evidence highlights SMAPs' role in reducing waste and fostering eco-innovation, particularly in manufacturing sectors (Henri & Journeault, 2010; Qian et al., 2018; Adams & Larrinaga, 2019). For instance, structured environmental cost accounting frameworks have improved energy efficiency and compliance with regulatory standards (Guenther et al., 2016; Latan et al., 2018).

However, SMAPs' effectiveness is contingent on organisational factors such as management commitment, stakeholder engagement, and technological readiness (Pumiviset & Suttipun, 2024; Schaltegger & Zvezdov, 2015; Pondeville et al., 2013). Studies emphasise that technical tools alone are insufficient without supportive governance. For example, Latan et al. (2018) demonstrated that firms with strong top-management advocacy achieved higher returns on sustainability investments. This underscores the need for SMAPs to be embedded within broader strategic frameworks to drive measurable environmental outcomes (Alnaim & Metwally, 2024; Chenhall, 2003; Otley, 2016).

2. 3. GREEN HUMAN RESOURCE MANAGEMENT (GHRM) AND ITS STRATEGIC ROLE

Green Human Resource Management (GHRM) aligns HR practices with environmental objectives through green recruitment, training, and performance management (Joshi et al., 2023; Al-Romeedy & Alharethi, 2025; Renwick et al., 2013; Dumont et al., 2017). By fostering employee eco-consciousness, GHRM directly enhances operational outcomes such as energy efficiency, waste reduction, and compliance with environmental standards (Tang et al., 2018; Pham et al., 2020). For instance, firms adopting green training programs report higher employee engagement in sustainability initiatives, translating into measurable reductions in carbon

footprints (Humairah et al., 2023; Masri & Jaaron, 2017; Singh et al., 2020).

Emerging research positions GHRM as a mediator between accounting systems and sustainability outcomes. Singh et al. (2020) found that GHRM amplifies the impact of environmental management accounting on employee green behaviours, while Latan et al. (2018) linked GHRM practices to improved returns on sustainability investments. These studies highlight GHRM's role in translating technical data from SMAPs into actionable employee-driven initiatives, such as eco-innovation and resource conservation (Jabbour et al., 2013; Yong et al., 2020). Moreover, GHRM's emphasis on skill development ensures workforce readiness to implement advanced sustainability frameworks, addressing gaps in technological adoption (Nik Abdullah et al., 2022; Al-Ghwayeen & Abdallah, 2020; Pham et al., 2019).

2. 4. JORDANIAN INDUSTRIAL CONTEXT AND SUSTAINABILITY CHALLENGES

Jordan's industrial sector faces mounting pressure from environmental regulations, resource scarcity, and global market demands (Abu Afifa & Saleh, 2021). The government's National Environmental Strategy (2020) mandates emission reductions and water conservation, compelling firms to adopt SMAPs for compliance and competitive advantage. However, barriers such as limited technological infrastructure and workforce skill gaps hinder effective implementation (Al-Ghwayeen & Abdallah, 2020; Masri & Jaaron, 2017).

GHRM emerges as a critical enabler in this context, bridging gaps between regulatory requirements and operational capabilities. For example, green training programs enhance employees' technical proficiency in using environmental accounting tools, while performance incentives align individual goals with corporate sustainability targets (Pham et al., 2020; Yong et al., 2020). Case studies from Jordanian manufacturing firms demonstrate that integrating GHRM with SMAPs improves compliance with water conservation policies and reduces energy consumption by up to 22% (Mansour, 2023; Al Hashem & Al Shaar, 2022).

2. 5. HYPOTHESES DEVELOPMENT

2. 5. 1. SMAPS AND GHRM PRACTICES

SMAPs provide the analytical frameworks and data-driven insights necessary to identify, design, and implement targeted GHRM practices (Singh et al., 2020; Roscoe et al., 2019). For instance, environmental cost accounting systems reveal gaps in employee competencies, enabling firms to prioritise green recruitment criteria or develop tailored sustainability training programs (Sult et al., 2024; Masri & Jaaron, 2017). Similarly, lifecycle costing and sustainability performance metrics inform HR departments about critical areas for behavioural change, such as aligning incentive structures with waste reduction targets (Pham et al., 2020; Hauashdh et al., 2024). Empirical studies confirm that SMAPs act as enablers of GHRM by translating abstract environmental goals into actionable HR policies (He et al., 2024; Guerci et al., 2016). This hypothesis aligns with contingency theory, which emphasises the alignment of technical systems (SMAPs) with human resource practices (GHRM) to address contextual challenges (Chenhall, 2003; Wijethilake et al., 2018; Al-Romeedy & Alharethi, 2025). Based on the theoretical arguments and empirical evidence discussed above, we propose the following hypothesis:

Hypothesis 1: *SMAPs have a significant positive effect on GHRM practices in Jordanian industrial firms.*

2. 5. 2. GHRM PRACTICES AND ENVIRONMENTAL SUSTAINABILITY PERFORMANCE.

GHRM fosters environmental Sustainability by equipping employees with the skills (ability), motivation, and opportunities to execute eco-initiatives (Renwick et al., 2013; Dumont et al., 2017; Sarmad et al., 2023). Green training programs enhance employees' technical proficiency in energy conservation and waste management, directly reducing resource inefficiencies (Jabbour, 2011; Yusliza et al., 2017). Sustainability-linked performance appraisals and rewards align individual behaviours with organisational eco-targets, as evidenced by a 22% reduction in manufacturing waste following the adoption of GHRM (Tang et al., 2018; O'Donohue & Torugsa, 2016; Kutaula et al., 2024). Furthermore, participatory practices, such as green teams, empower employees to innovate, driving eco-friendly process redesigns (Paillé et al., 2020; Irawan et al., 2023). These findings underscore GHRM's role in operationalising human capital into measurable environmental outcomes, particularly in resource-constrained settings (Arulrajah et al., 2015; Rawashdeh, 2018). Given the strong theoretical foundation and empirical support for GHRM's role in enhancing environmental sustainability, we hypothesise that:

Hypothesis 2: *GHRM practices have a significant positive effect on environmental sustainability performance in Jordanian industrial firms.*

2. 5. 3. INDIRECT EFFECTS OF GHRM PRACTICES

GHRM bridges the gap between SMAPs' technical outputs and on-the-ground environmental actions by institutionalising Sustainability into daily employee practices (Singh et al., 2020; Alam et al., 2020). For example, carbon footprint analyses generated through SMAPs can inform the design of green training modules, while sustainability performance dashboards enable HR managers to track progress toward eco-goals (Giama & Papadopoulos, 2016; Saetang et al., 2024). This mediation is rooted in the ability-motivation-opportunity (AMO) framework, where GHRM provides the ability (via training), motivation (via incentives), and opportunity (via participatory mechanisms) for employees to act on SMAP-derived insights (Renwick et al., 2016; Adu Sarfo et al., 2024). Empirical studies affirm that GHRM amplifies the impact of accounting systems, with mediated models explaining 35%–48% of the variance in environmental performance (Jabbour et al., 2019; Yusliza et al., 2019). In Jordan's industrial context, where workforce readiness and regulatory compliance are critical, GHRM's mediation is likely to be even more pronounced (Masri & Jaaron, 2017; Freihat et al., 2024). Drawing upon the theoretical rationale and empirical evidence presented above, we formulate the following mediation hypothesis:

Hypothesis 3: *GHRM practices mediate the relationship between SMAPs and environmental sustainability performance in Jordanian industrial firms.*

3. METHODOLOGY

3. 1. RESEARCH DESIGN

This study adopts a quantitative, cross-sectional survey approach to investigate the relationship between Strategic Management Accounting Practices (SMAPs), Green Human Resource Management (GHRM), and environmental sustainability outcomes in Jordanian industrial firms. The research design aligns with established frameworks for examining sustainability-oriented organisational practices (Journeault, 2016; Wijethilake et al., 2018). While the original data collection (November 2024) did not explicitly measure GHRM constructs, the survey captured critical organisational factors, such as employee engagement and training systems, which are

integral to GHRM frameworks (Dumont et al., 2017; Gupta & Jangra, 2024). These factors are reinterpreted through a GHRM lens, consistent with methodological precedents in sustainability accounting research (Okunhon & Ige-Olaobaju, 2024); Hajj Hussein & Bou Zakhem, 2024).

3. 2. SAMPLE AND DATA COLLECTION

The target population comprised managerial and accounting employees from 53 Jordanian industrial firms listed on the Amman Stock Exchange, spanning the manufacturing, chemicals, pharmaceuticals, and engineering sectors. A stratified random sampling technique ensured proportional industry representation (Taherdoost, 2016). Data were collected from 180 employees via a structured questionnaire, achieving a response rate of 73%.

***Sample Adequacy**:* The sample size meets PLS-SEM requirements, satisfying the "10 times rule" (10 × maximum number of structural paths = 10 × 4 = 40) and exceeding the minimum threshold of 100 cases for stable estimates (Hair & Alamer, 2022; Kock & Hadaya, 2018). A post-hoc power analysis using G*Power 3.1 (Aberson, 2019) confirmed 85% power (α = 0.05, effect size = 0.15), aligning with similar studies in sustainability accounting (Ortiz-Martínez et al., 2023; Cohen, 1988).

Ethical considerations: This study received ethical approval from the Research Ethics Committee of The Hashemite University (approval reference number: 5/2024/2025). Written informed consent was obtained from all participants. A cover letter was provided at the beginning of the survey that explained the purpose of the research, assured participants of anonymity, and clarified that data would be used for research purposes only. Submission of the completed survey was taken as confirmation of written consent.

Demographics:

- **Age**: 55% aged 25–35 years
- **Education**: 70% of bachelor's degree holders
- **Roles**: 61.1% accounting professionals; 38.9% managers
- **Experience**: 84.4% with <5 years of experience

While the early-career dominance may reflect evolving sustainability practices in Jordan (Issa, 2023), it captures perspectives from professionals trained in contemporary sustainability curricula (Alkhawaldeh, 2017; Gerged et al., 2021).

3. 3. MEASUREMENT INSTRUMENTS

The questionnaire assessed three latent constructs using validated scales:

1. **Strategic Management Accounting Practices (SMAPs)**:
   - Measured adoption of environmental cost analysis, lifecycle budgeting, and sustainability performance measurement (Nik Abdullah et al., 2022; al-Nimer, 2010; Ojra et al., 2021; Alsharari, 2024).
   - 5-point Likert scale (1 = Never, 5 = Very Often); Cronbach's α = 0.950.
2. **Green Human Resource Management (GHRM)**:
   - Employee engagement, green training, and performance incentives were reinterpreted as proxies for GHRM, supported by established linkages between these practices and GHRM frameworks (Adu Sarfo et al., 2024; Veerasamy et al., 2023; Ercantan & Eyupoglu, 2022).
   - Example item: *"My organisation provides training on environmental compliance."*
   - 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree); Cronbach's α = 0.893.

3. **Environmental Sustainability**:
    - Assessed waste reduction, emissions control, and regulatory compliance (Maas et al., 2016; Qian et al., 2018; Bade et al., 2024).
    - 5-point Likert scale (1 = Poor, 5 = Excellent); Cronbach's α = 0.907.

3. 4. LIMITATIONS AND INTERPRETATIVE RIGOR

Key Limitations:

1. **Indirect GHRM Measurement**: The original survey did not explicitly measure GHRM but inferred it through employee engagement and training systems. This reinterpretation, while methodologically sound (Aguinis et al., 2019), requires validation through future studies with direct GHRM scales (Perez et al., 2024).
2. **Sample Size**: Though adequate for PLS-SEM, larger samples could enhance generalisability (Hair & Alamer, 2022).

Mitigation Strategies:

- Explicitly framed findings as exploratory, emphasising theoretical rather than causal claims (Aguinis & Solarino, 2019). Anchored interpretations in established GHRM literature (e.g., Ren et al., 2018; Kamboj & Anthonysamy, 2024).

4. RESULTS AND ANALYSIS

4. 1. PRELIMINARY ANALYSIS

Data screening confirmed multivariate normality, with skewness (-0.714 to -0.470) and kurtosis (-0.564 to 1.066) values within acceptable thresholds (Kline, 2016). Five outliers identified via Mahalanobis distance ($p < .001$) were retained, as they reflected genuine organisational diversity rather than measurement anomalies, aligning with recommendations for preserving ecological validity in field research (Tabachnick & Fidell, 2019). Common method bias was negligible, as Harman's single-factor test revealed that the first factor accounted for only 28.7% of the variance, well below the 50% threshold (Podsakoff et al., 2003). This strengthens confidence in the validity of self-reported measures, particularly when examining latent constructs like GHRM (Conway & Lance, 2010). We also assessed potential multicollinearity concerns given the high correlations observed among GHRM dimensions (0.830, 0.899, and 0.911, as shown in Table 1). Variance Inflation Factor (VIF) analysis revealed values ranging from 1.24 to 3.42 across all predictor variables, well below the critical threshold of 5 (Hair & Alamer, 2022) indicating that multicollinearity does not substantially affect the study regression estimates. In addition, a second-order measurement model for GHRM further addresses these high correlations by acknowledging the shared variance among these theoretically related subdimensions while preserving their unique contributions (Becker et al., 2012). This approach is consistent with recent GHRM studies that conceptualise GHRM as a multidimensional yet unified construct (Yusliza et al., 2020; Renwick et al., 2016).

4. 2. DESCRIPTIVE STATISTICS AND CORRELATIONS

Table 1 summarises the descriptive statistics and Pearson correlations. GHRM dimensions demonstrated moderate to high implementation levels, with Green Policy Consistency (M = 3.747) scoring the highest, followed by Green Adaptability (M = 3.680) and Green Employee Involvement (M = 3.587). SMAPs showed moderate adoption (M = 3.589), suggesting room for improvement in integrating Sustainability into accounting frameworks. Environmental Sustainability performance was similarly moderate (M = 3.572), consistent with prior studies in

emerging economies (Jabbour et al., 2017; Dasinapa, 2024; Appiagyei & Donkor, 2024).

Correlation analysis revealed strong positive associations between GHRM and Environmental Sustainability ($r = 0.738$, $p < 0.01$), surpassing the SMAPs-Sustainability relationship ($r = 0.509$, $p < 0.01$). This aligns with the resource-based view theory, which posits that human capital mechanisms like GHRM are critical for translating technical systems (e.g., SMAPs) into sustainable outcomes (Barney et al., 2021). The strong SMAPs-GHRM correlation ($r = 0.697$, $p < 0.01$) further supports the conceptual model's premise that accounting practices enable HR systems to align with sustainability goals (Pumiviset & Suttipun, 2024; Dasanayaka et al., 2021).

Table 1. Descriptive Statistics and Correlations for Main Study Variables

Variables	1	2	3	4	5	6	Mean	SD
1. Environmental Sustainability	1.000						3.572	0.796
2. SMAPs	0.509**	1.000					3.589	0.561
3. GHRM	0.738**	0.697**	1.000				3.671	0.636
4. Green Employee Involvement	0.653**	0.612**	0.830**	1.000			3.587	0.540
5. Green Policy Consistency	0.694**	0.638**	0.899**	0.659**	1.000		3.747	0.705
6. Green Adaptability	0.679**	0.628**	0.911**	0.672**	0.753**	1.000	3.680	0.662

Note: ** Correlation significant at $p < 0.01$

Note: The high correlations among GHRM dimensions were addressed through VIF analysis and second-order construct modelling, as discussed in the Preliminary Analysis section.

Source: Author's calculation

4. 3. MEASUREMENT MODEL ASSESSMENT

4. 3. 1. RELIABILITY AND VALIDITY ANALYSIS

Table 2 confirms the measurement model's robustness. Composite reliability (CR) exceeded 0.90 for all constructs, surpassing the 0.70 threshold (Hair & Alamer, 2022). While GHRM (AVE = 0.486) and SMAPs (AVE = 0.405) fell slightly below the 0.50 AVE benchmark, their high CR values (0.907 and 0.959, respectively) justify retaining these constructs, as CR prioritises internal consistency over variance extraction (Fornell & Larcker, 1981). Discriminant validity was established via the Fornell-Larcker criterion, with √AVE exceeding inter-construct correlations. HTMT ratios (all < 0.85) further validated discriminant validity (Henseler et al., 2015), mitigating concerns about multicollinearity.

Table 2. Measurement Model Assessment

Construct	CR	AVE	MSV	√AVE	GHRM	SMAPs	Env. Sustainability
GHRM	0.907	0.486	0.544	0.697	0.697		
SMAPs	0.959	0.405	0.486	0.636	0.697	0.636	
Env. Sustainability	0.921	0.700	0.544	0.837	0.738	0.509	0.837

Note: CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; Diagonal elements (bold) are the square root of AVE; Off-diagonal elements are correlations between constructs

Source: Author's calculation

4. 3. 2. SECOND-ORDER FACTOR ANALYSIS FOR GHRM

Table 3 validates GHRM's hierarchical structure. All first-order dimensions loaded significantly on the second-order construct (loadings: 0.830–0.911, $p < 0.001$), reinforcing GHRM as a multidimensional system integrating policies, employee engagement, and adaptive practices (Renwick et al., 2016). The second-order AVE (0.780) and CR (0.914) indicate strong conver-

gent validity and reliability, consistent with recent studies treating GHRM as a higher-order construct (Roscoe et al., 2019). Model fit indices (SRMR = 0.063, NFI = 0.928) align with benchmarks for partial least squares models (Wang et al., 2024).

Table 3. Second-order Factor Structure of GHRM

First-Order Dimension	Loading to Second-Order GHRM	t-value	AVE	CR
Green Employee Involvement	0.830	32.57***	0.559	0.863
Green Policy Consistency	0.899	48.34***	0.578	0.845
Green Adaptability	0.911	53.19***	0.541	0.854
Second-Order GHRM	-	-	0.780	0.914

Note: *** $p < 0.001$; Model fit: SRMR = 0.063; NFI = 0.928

Source: Author's calculation

4. 4. STRUCTURAL MODEL AND HYPOTHESIS TESTING

4. 4. 1. DIRECT EFFECTS AND HYPOTHESIS TESTING

The structural model analysis (Table 4) confirms all hypothesised relationships. Hypothesis 1 (H_1) is strongly supported, with Strategic Management Accounting Practices (SMAPs) exerting a significant positive influence on Green Human Resource Management (GHRM) ($\beta = 0.733$, $p < 0.001$, $f^2 = 1.159$). This aligns with institutional theory, which posits that formal accounting systems institutionalise sustainability-oriented norms, thereby shaping HR policies and practices (Alnaim & Metwally, 2024). Hypothesis 2 (H_2) is also validated, as GHRM demonstrates a robust direct effect on environmental Sustainability ($\beta = 0.763$, $p < 0.001$, $f^2 = 0.829$), reinforcing the strategic role of HRM in operationalising sustainability objectives through employee engagement, policy alignment, and adaptive organisational structures (Ren et al., 2023). Hypothesis 3 (H_3) is confirmed by the non-significant direct path between SMAPs and Environmental Sustainability ($\beta = -0.043$, $p = 0.505$), underscoring GHRM's critical mediating role. This finding addresses the "black box" critique of accounting systems, emphasising that technical tools like SMAPs require human-centric implementation mechanisms to translate into tangible sustainability outcomes (Adewale et al., 2021; Contini et al., 2025). Collectively, the model explains 54.5% of the variance in environmental sustainability performance ($R^2 = 0.545$), with Stone-Geisser's Q^2 value of 0.386 confirming its high predictive relevance (Hair & Alamer, 2022). These results highlight GHRM as the linchpin connecting strategic accounting practices to ecological outcomes, bridging technical and human systems in sustainability management.

Table 4. Structural Model Results

Hypothesis/Path	Path Coefficient (β)	t-value	p-value	95% CI	Effect Size (f^2)	Decision
H_1: SMAPs → GHRM	0.733	32.312	<0.001	[0.689, 0.777]	1.159 (Large)	Supported
H_2: GHRM → Env. Sustainability	0.763	13.098	<0.001	[0.648, 0.878]	0.829 (Large)	Supported
H_3: SMAPs → Env. Sustainability	-0.043	0.666	0.505	[-0.169, 0.083]	0.002 (None)	Supported

Note: CI = Confidence Interval; Effect size (f^2) values: small = 0.02, medium = 0.15, large = 0.35 (Cohen, 1988)

Source: Author's calculation

4. 4. 2. POLYNOMIAL REGRESSION ANALYSIS

The study conducted a polynomial regression analysis to explore potential non-linear relationships between SMAPs and GHRM dimensions. The results are presented in Table 5.

Table 5. Polynomial Effects of SMAPs on GHRM Dimensions

Predictor	Green Employee Involvement	Green Policy Consistency	Green Adaptability
SMAPs (linear)	0.589***	0.624***	0.617***
SMAPs² (quadratic)	0.113*	0.087	0.104*
R^2	0.397	0.414	0.405
ΔR^2 due to quadratic term	0.012*	0.007	0.010*

Note: * $p < 0.05$, *** $p < 0.001$

Source: Author's calculation

Table 5 reveals non-linear relationships between SMAPs and two GHRM dimensions: Green Employee Involvement ($\beta = 0.113$, $p < 0.05$) and Green Adaptability ($\beta = 0.104$, $p < 0.05$). This suggests diminishing returns at lower SMAPs implementation levels, with accelerated effects as practices mature—a pattern observed in innovation adoption curves (Ojra, et al., 2021; Dang et al., 2021). Green Policy Consistency's linear relationship ($\beta = 0.087$, $p > 0.05$) implies that policy formalisation depends more on baseline SMAPs adoption than incremental improvements.

4. 5. MEDIATION ANALYSIS

4. 5. 1. OVERALL MEDIATION EFFECT

Table 6 demonstrates full mediation (VAF = 108.3%), with SMAPs' total Effect on Sustainability fully channelled through GHRM (indirect $\beta = 0.559$, $p < 0.001$). The VAF exceeding 100% arises from covariance among GHRM dimensions, a known phenomenon in multilevel mediation models (Preacher & Hayes, 2008). This aligns with sociotechnical systems theory, wherein technical systems (SMAPs) and social systems (GHRM) interact holistically to achieve Sustainability (Appannan et al., 2023; Hadi et al., 2018; Chaudhuri & Jayaram, 2019).

Table 6. Mediation Analysis Results

Effect	Path Coefficient (β)	t-value	p-value	95% CI	Decision
Direct Effect (SMAPs → Env. Sustainability)	-0.043	0.666	0.505	[-0.169, 0.083]	Non-significant
Indirect Effect (SMAPs → GHRM → Env. Sustainability)	0.559	12.097	<0.001	[0.479, 0.662]	Significant
Total Effect (Direct + Indirect)	0.516	10.862	<0.001	[0.421, 0.610]	Significant
VAF (Indirect Effect / Total Effect)	1.083	-	-	-	Full Mediation

Note: CI = Confidence Interval; VAF = Variance Accounted For; VAF > 80% indicates full mediation (Hair & Alamer,2022)

Source: Author's calculation

4. 5. 2. MEDIATION EFFECT SIZE ANALYSIS

The study calculated standardised effect size metrics to quantify the magnitude of the mediation effect. The results of this analysis are presented in Table 7.

Table 7. Mediation Effect Size Assessment

Relationship	Indirect Effect	95% CI	PM	κ^2	Interpretation
SMAPs → GHRM → Env. Sustainability	0.559	[0.479, 0.662]	1.08	0.537	Large mediation effect

Note: PM = Proportion Mediated (ratio of indirect Effect to total Effect); κ^2 = Kappa-squared (standardised mediation effect size); κ^2 values: small = 0.01, medium = 0.09, large = 0.25 (Preacher & Kelley, 2011)

Source: Author's calculation

The mediation effect size analysis yielded a κ^2 value of 0.537, indicating a significant mediation effect according to Preacher and Kelley's (2011) guidelines. The Proportion mediated (PM) value of 1.08 confirms full mediation, with the indirect Effect accounting for effectively all of the relationships between SMAPs and Environmental Sustainability.

4. 5. 3. DIMENSION-LEVEL MEDIATION ANALYSIS

The study conducted a dimension-level mediation analysis to provide deeper insights into the specific mechanisms through which GHRM mediates the SMAPs-Sustainability relationship. The results are presented in Table 8.

Table 8: Dimension-Level Mediation Analysis

Mediating Pathway	Path a (SMAPs → Dimension)	Path b (Dimension → Sustainability)	Indirect Effect (a × b)	% of Total Effect
SMAPs → Green Employee Involvement → Sustainability	0.612**	0.387**	0.237**	45.9%
SMAPs → Green Policy Consistency → Sustainability	0.638**	0.455**	0.290**	56.2%
SMAPs → Green Adaptability → Sustainability	0.628**	0.422**	0.265**	51.4%

Note: ** $p < 0.01$

Source: Author's calculation

Table 8 highlights Green Policy Consistency as the strongest mediator (56.2% of the Total Effect), emphasising the need for coherent policies to translate accounting metrics into actionable HR practices (Jackson et al., 2014). Green Adaptability (51.4%) and Employee Involvement (45.9%) further illustrate the synergistic roles of flexibility and participation in sustainability implementation (Paillé et al., 2020; Elshaer et al., 2024; Rumman & Alqudah,2024).

4. 6. ROBUSTNESS ANALYSES

4. 6. 1. MULTI-GROUP ANALYSIS

To assess the stability of the study findings across different organisational contexts, the study conducted a multi-group analysis comparing path coefficients across different firm sizes and ages. No significant differences in path coefficients were found between small and large firms or between younger and older firms (all $p > 0.05$), supporting the robustness of findings across organisational contexts.

4. 6. 2. ALTERNATIVE ESTIMATION METHODS

To further establish the robustness of the study findings, the study compared results across alternative estimation methods. Table 9 presents this comparison.

Table 9. Robustness Analysis with Alternative Estimation Methods

Estimation Method	SMAPs → GHRM	GHRM → Env. Sustainability	Indirect Effect	Model Fit
PLS-SEM (Primary)	0.733***	0.763***	0.559***	SRMR = 0.072
CB-SEM (Maximum Likelihood)	0.718***	0.741***	0.532***	CFI = 0.924, RMSEA = 0.058
Bootstrap (BCa, 10,000 resamples)	0.733***	0.763***	0.559*** [0.472, 0.657]	-

Note: *** $p < 0.001$; BCa = Bias-Corrected and Accelerated bootstrap; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation

Source: Author's calculation

The comparison of results across estimation methods confirmed the stability of the study findings. Both Partial Least Squares Structural Equation Modeling (PLS-SEM) and Covariance-Based Structural Equation Modeling (CB-SEM) yielded similar path coefficients and indirect effects, with only minor differences in magnitude. The bootstrap analysis with 10,000 resamples produced a bias-corrected confidence interval for the indirect Effect [0.472, 0.657] that closely matched the study primary analysis.

4. 6. 3. CONDITIONAL PROCESS ANALYSIS

The study conducted a conditional process analysis to examine potential boundary conditions of the mediation effect. Table 10 presents the conditional indirect effects of firm size.

Table 10. Conditional Indirect Effects by Firm Size

Firm Size	Indirect Effect of SMAPs on Env. Sustainability	95% CI	Index of Moderated Mediation
Small Firms	0.532	[0.427, 0.637]	0.065
Medium Firms	0.559	[0.479, 0.662]	[-0.042, 0.172]
Large Firms	0.597	[0.478, 0.716]	

Note: Small firms < 150 employees; Medium firms = 150-300 employees; Large firms > 300 employees

Source: Author's calculation

The stability of the results was confirmed across estimation methods (PLS-SEM, CB-SEM) and firm sizes. The non-significant moderated mediation index (95% CI [-0.042, 0.172]) suggests the model's generalisability, consistent with the contingency theory's premise that core HR-accounting linkages transcend contextual differences (Harney, 2016; Donaldson, 2001).

Accordingly, the analysis robustly supports all hypotheses, establishing GHRM as the critical conduit through which SMAPs enhance Sustainability. Green Policy Consistency emerges as the linchpin, while the non-linear effects in Employee Involvement and Adaptability suggest targeted SMAPs investments yield disproportionate gains. The full mediation effect underscores the necessity of aligning technical and human systems for sustainability success.

5. DISCUSSION

The empirical findings offer critical insights into the potential mediating role of Green Human Resource Management (GHRM) in translating Strategic Management Accounting Practices (SMAPs) into environmental sustainability outcomes. The robust mediation effect ($\beta = 0.559$, $p < 0.001$; Table 6) aligns with sociotechnical systems theory, which emphasises the interdependence of technical systems (SMAPs) and social systems (GHRM) in achieving Sustainability (Contini et al., 2025; Ren et al., 2023). Although GHRM was not directly measured, the cultural

dimensions analysed—employee involvement, policy consistency, and adaptability—closely mirror established GHRM constructs in the literature (Alam et al., 2021; Jabbour et al., 2020; Ercantan & Eyupoglu, 2022). For instance, the high score for Green Policy Consistency (M = 3.747; Table 1) reflects the integration of Sustainability into HR policies, a hallmark of mature GHRM systems (Papademetriou et al., 2025; Banga & Gobind, 2025). Similarly, the non-linear effects observed in Green Employee Involvement and Adaptability (Table 5) suggest threshold effects in GHRM implementation, where incremental SMAPs investments yield disproportionate gains in employee engagement and organisational flexibility—a pattern consistent with innovation diffusion theory (Humairah et al., 2023; Chali & Lakatos, 2024).

However, direct measurement of HR practices (e.g., green training, sustainability-linked performance appraisal) would strengthen causal claims (Jackson et al., 2011; Aboramadan, 2022). The absence of a direct SMAPs-sustainability path underscores that technical accounting tools alone are insufficient; they require complementary HR systems to mobilise human capital toward environmental goals (Latan et al., 2018; Akankunda et al., 2024). This aligns with the resource-based view, where GHRM acts as a "human infrastructure" that converts SMAPs' technical inputs into sustainable outputs (Joshi et al., 2023; Gerhart & Feng, 2021; Wright et al., 2001). Future studies should explicitly measure GHRM practices to validate these linkages.

5. 1. THEORETICAL IMPLICATIONS

This study advances sustainability accounting and HRM theory in three key ways. First, it extends contingency theory by identifying GHRM as a critical mediator between SMAPs and environmental performance. The study findings suggest that targeted HR practices—such as green policy alignment and adaptive capability-building—are more precise mechanisms through which accounting systems influence Sustainability (Ren et al., 2018; Majuri & Halonen, 2020). Second, it bridges the gap between technical and social sustainability research. By positioning GHRM as the conduit for SMAPs' effects, the study integrates traditionally siloed literature, offering a holistic framework that reflects the interplay of financial and human systems (Gond et al., 2012; Esho & Verhoef, 2020; Garg et al., 2024). Third, the full mediation effect challenges the prevailing assumption in environmental accounting literature that technical tools directly drive performance (Hasan et al., 2024; Wu & Tham, 2023). Instead, the study results support a "sequential integration" model, where SMAPs enable GHRM, operationalising Sustainability—a nuance absent in prior mediation studies (Ateeq et al., 2024; Wijethilake et al., 2018).

The dimension-level mediation analysis (Table 8) further refines the theory. Green Policy Consistency's dominant role (56.2% of Total Effect) highlights the centrality of formalised HR policies in sustainability implementation, resonating with institutional theory's focus on rule-based systems (Banga & Gobind, 2025; Campos-García et al., 2024). Conversely, Green Adaptability's strong mediation (51.4%) underscores dynamic capability theory, where HR flexibility enables firms to respond to evolving environmental demands (Mohammad et al., 2024; Adabenege, 2025). These dual pathways suggest that GHRM's effectiveness lies in balancing structural formalisation with operational agility—a theoretical insight with implications for sustainability governance models.

5. 2. PRACTICAL IMPLICATIONS

For Jordanian industrial firms, the findings underscore the necessity of integrating SMAPs with GHRM systems. First, firms should prioritise green policy integration by aligning HR practices—such as recruitment, training, and performance appraisal—with sustainability accounting metrics. For example, linking carbon accounting data to department-level KPIs could incentivise managers to adopt greener practices supported by HR-led training programs on environmen-

tal compliance (Tahir et al., 2024; Jerónimo et al., 2020; Jabbour, 2011). Second, the moderate SMAPs adoption indicates untapped potential. Firms could implement annual green training workshops to enhance employees' ability to interpret and act on sustainability accounting data, fostering a culture of eco-literacy (Sun et al., 2024). Third, the lower score for Green Employee Involvement (M = 3.587) suggests opportunities for participatory initiatives, such as cross-functional "green teams" that use SMAPs data to propose efficiency improvements—a practice shown to boost engagement in Jordanian manufacturing contexts (Masri & Jaaron, 2017).

These insights highlight the risks of deploying standardised sustainability accounting tools without localising HR practices for multinational corporations operating in Jordan. For instance, a global SMAPs system tracking water usage must be paired with region-specific HR interventions, such as training programs addressing Jordan's acute water scarcity (Abu Afifa & Saleh, 2021). Such contextualisation ensures that technical systems resonate with local ecological and cultural realities.

5. 3. POLICY RECOMMENDATIONS

Aligning with Jordan's National Green Growth Plan (2021–2025), which prioritises sustainable industrialisation, the study proposes four evidence-based policies:

1. Green Skills Certification Programs: Partnering with vocational institutes, the government could mandate certification in environmental management accounting and GHRM for industrial managers. This would address the skills gap identified in SMAPs adoption (M = 3.589) while fostering HR practices that translate accounting data into action (Jackson et al., 2011).
2. Tax Incentives for Integrated Systems: Firms demonstrating synergy between SMAPs and GHRM may receive tax rebates, such as utilising carbon accounting to guide green recruitment. This aligns with the plan's focus on "eco-industrial parks" and rewards the mediation pathways identified in the study analysis.
3. Sustainability Reporting Expansion: Requiring firms to disclose both environmental metrics (e.g., emissions) and HR initiatives (e.g., green training hours) in annual reports would mirror the dual focus of the study findings. Chile's 2022 sustainability reporting regulations offer a viable template (Wagenhofer, 2023).
4. Industry-Academia Partnerships: Establishing research consortia between Jordanian universities and industrial firms could co-develop GHRM frameworks tailored to Arab business contexts. For example, adapting Western-based SMAPs tools to Jordan's collectivist culture through HR practices that emphasise communal environmental responsibility (Ahmed et al., 2022).

These recommendations recognise that Jordan's path to Sustainability hinges on synchronising technical innovations with human capital development—a lesson with broader relevance for emerging economies.

6. CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

6. 1. CONCLUSION

This study advances the understanding of sustainability implementation by demonstrating that Green Human Resource Management (GHRM) serves as the critical linchpin connecting Strategic Management Accounting Practices (SMAPs) to environmental outcomes in Jordanian industrial firms. The full mediation effect ($\beta = 0.559$, $p < 0.001$) challenges conventional assumptions that technical accounting systems directly drive Sustainability, revealing that

their efficacy hinges on human resource mechanisms. The study findings redefine the interplay between technical and social systems in sustainability research by positioning GHRM as the operational conduit through which SMAPs translate into measurable ecological improvements. The dominance of Green Policy Consistency (56.2% of the Total Effect) underscores the necessity of formalised HR frameworks to institutionalise environmental goals. At the same time, the non-linear relationships in Adaptability and employee involvement highlight the dynamic thresholds at which SMAPs investments yield exponential gains.

These insights mandate a paradigm shift for practitioners: Sustainability accounting must be coupled with targeted HR interventions, such as green training programs aligned with carbon metrics or cross-departmental teams empowered to act on waste reduction data. Policy-wise, the study results validate Jordan's National Green Growth Plan's emphasis on integrated systems, advocating for regulatory frameworks that incentivise SMAPs-GHRM synergy, such as tax rebates for firms demonstrating HR-accounting alignment. Theoretically, this study bridges the long-standing divide between environmental accounting and HRM literature, offering a sociotechnical model where human capital mechanisms operationalise technical data—a framework applicable beyond emerging economies to global sustainability challenges. Future research must now prioritise validating these linkages through direct GHRM measurement, but the implications are clear: accounting systems cannot "go green" without human resources turning data into action.

6. 2. LIMITATIONS AND FUTURE RESEARCH

While this study offers critical insights, four limitations warrant consideration. First, the cross-sectional design precludes causal claims. Although the temporal sequence of SMAPs→GHRM→Sustainability is theoretically justified, longitudinal data tracking GHRM implementation alongside accounting changes is needed to confirm mediation dynamics (Ployhart & Vandenberg, 2010). Second, though validated through Harman's test, self-reported data may inflate relationships through common method bias; multi-source data linking managerial SMAPs reports to external sustainability audits would enhance robustness (Podsakoff et al., 2012). Third, despite the study VIF analysis showing acceptable values, the high correlations among GHRM dimensions represent a potential limitation that future studies should address through refined measurement scales. Fourth, omitted variables—particularly leadership commitment and supply chain pressures—may influence both GHRM adoption and sustainability outcomes. For instance, CEOs' environmental values could drive both HR policies and accounting innovations, a confounder requiring control in future models (Haddock-Millar et al., 2016).

Future research should prioritise four directions: (1) Longitudinal studies tracking how SMAPs-GHRM alignment evolves during sustainability certification processes (e.g., ISO 14001 adoption), (2) Comparative analyses of GHRM's mediating role in differing regulatory regimes (e.g., Jordan vs. EU contexts), (3) Intervention-based designs testing training programs that enhance employees' ability to operationalise SMAPs data, and (4) Multilevel models examining how national culture moderates SMAPs-GHRM linkages—particularly in collectivist Arab contexts where communal norms may amplify green HR practices' impact (Carballo-Penela et al., 2023; Hofstede et al., 2010). Expanding beyond industrial sectors to service industries (e.g., tourism) could reveal context-specific mediation pathways, further refining the sociotechnical framework proposed here.

Author Contributions: M.A.: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing.

All authors have read and approved the final version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Disclosure of Interest: The authors report no conflict of interest.

REFERENCES

Abdallah, A. B., & Al-Ghwayeen, W. S. (2020). Green supply chain management and business performance: The mediating roles of environmental and operational performances. *Business Process Management Journal,* 26(2), 489–512. https://doi.org/10.1108/BPMJ-03-2018-0091

Aboramadan, M. (2022). The effect of green HRM on employee green behaviors in higher education: The mediating mechanism of green work engagement. I*nternational Journal of Organizational Analysis,* 30, 7–23. https://doi.org/10.1108/IJOA-05-2020-2190

Abu Afifa, M. M., & Saleh, I. (2021). Management accounting systems effectiveness, perceived environmental uncertainty and enterprise risk management: Evidence from Jordan. *Journal of Accounting & Organizational Change,* 17(5), 704–727. https://doi.org/10.1108/JAOC-10-2020-0165

Adams, C. A., & Larrinaga, C. (2019). Progress: Engaging with organisations in pursuit of improved sustainability accounting and performance. *Accounting, Auditing & Accountability Journal,* 32(8), 2367–2394. https://doi.org/10.1108/AAAJ-03-2018-3399

Adewale, T. T., Olorunyomi, T. D., & Odonkor, T. N. (2021). Advancing sustainability accounting: A unified model for ESG integration and auditing. *International Journal of Science and Research Archive*, 2(1), 169–185. https://doi.org/10.30574/ijsra.2021.2.1.0021

Adu Sarfo, P., Zhang, J., Nyantakyi, G., Lassey, F. A., Bruce, E., & Amankwah, O. (2024). Influence of green human resource management on firm's environmental performance: Green employee empowerment as a mediating factor. *PLOS ONE*, 19(4), e0293957. https://doi.org/10.1371/journal.pone.0293957

Aguinis, H., & Solarino, A. M. (2019). Transparency and replicability in qualitative research: The case of interviews with elite informants. *Strategic Management Journal,* 40(8), 1291–1315. https://doi.org/10.1002/smj.3015

Ahmed, F., Fattani, M. T., Ali, S. R., & Enam, R. N. (2022). Strengthening the bridge between academic and the industry through the academia-industry collaboration plan design model. *Frontiers in Psychology*, 13. https://doi.org/10.3389/fpsyg.2022.875940

Akankunda, B., Nkundabanyanga, S. K., Kaawaase, T. K., Adaramola, M. S., Nkurunziza, G., & Tumwine, S. (2024). The mediating effect of management control systems on human capital and sustainable performance among Ugandan power companies. *Cogent Business & Management*, 11(1). https://doi.org/10.1080/23311975.2024.2324369

Al Hashem, R. O., & Al Shaar, E. M. (2022). The impact of green human resource management practices on job performance – The mediating role of resistance to change: An applied study on Jordanian manufacturing companies. *Jordan Journal of Business Administration*, 18(1). https://jjournals.ju.edu.jo/index.php/JJBA/article/view/27

Al-Abdallah, G. M. (2021). Can internal marketing activities save small and medium industrial enterprises in a tough economy? Back to the basics approach. *International Journal of Industrial and Systems Engineering*, 38(4), 469–483. https://doi.org/10.1504/IJISE.2021.116925

Alam, M. A., Niu, X., & Rounok, N. (2021). Effect of green human resource management (GHRM) overall on organization's environmental performance: The mediating role of green employee empowerment. *International Journal of Research in Business and Social Science*, 10(4), 99–116. https://doi.org/10.20525/ijrbs.v10i4.1230

Alkhawaldeh, A. (2017). School-based teacher training in Jordan: Towards on-school sustainable professional development. *Journal of Teacher Education for Sustainability,* 19(2), 51–68. https://doi.org/10.1515/jtes-2017-0014

Alnaim, M., & Metwally, A. B. M. (2024). Institutional pressures and environmental management accounting adoption: Do environmental strategy matter? *Sustainability,* 16(7), 3020. https://doi.org/10.3390/su16073020

Al-Nimer, M. (2010). An exploratory study on factors influencing the adoption of management accounting practices in developing countries: Evidence from Jordan. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.1661975

Al-Romeedy, B. S., & Alharethi, T. (2025). Leveraging green human resource management for sustainable tourism and hospitality: A mediation model for enhancing green reputation. *Discover Sustainability*, 6, 67. https://doi.org/10.1007/s43621-025-00829-2

Al-Shaer, H., & Zaman, M. (2018). Credibility of sustainability reports: The contribution of audit committees. *Business Strategy and the Environment*, 27(7), 973–986. https://doi.org/10.1002/bse.2046

Alsharari, N. M. (2024). The interplay of strategic management accounting, business strategy and organizational change: As influenced by a configurational theory. *Journal of Accounting in Emerging Economies*, 20(1), 153–176. https://doi.org/10.1108/JAOC-09-2021-0130

Appannan, J. S., Mohd Said, R., Ong, T. S., & Senik, R. (2023). Promoting sustainable development through strategies, environmental management accounting and environmental performance. *Business Strategy and the Environment*, 32(4), 1914–1930. https://doi.org/10.1002/bse.3227

Appiagyei, K., & Donkor, A. (2024). Integrated reporting quality and sustainability performance: Does firms' environmental sensitivity matter? *Journal of Accounting in Emerging Economies*, 14(1), 25–47. https://doi.org/10.1108/JAEE-02-2022-0058

Arulrajah, A. A., Opatha, H. H. D. N. P., & Nawaratne, N. N. J. (2015). Green human resource management practices: A review. *Sri Lankan Journal of Human Resource Management,* 5(1), 1–16. https://doi.org/10.4038/sljhrm.v5i1.5624

Ateeq, A., AlMuslemani, A., Milhem, M., & Alzoraiki, M. (2024). Strategic integration of business systems: Merging ERP, HRM, and accounting for enhanced performance—An insightful conceptual article. In B. Awwad (Ed.), The AI revolution: Driving business innovation and research 267–284. Springer. https://doi.org/10.1007/978-3-031-54379-1_18

Bade, C., Olsacher, A., Boehme, P., Truebel, H., Bürger, L., & Fehring, L. (2024). Sustainability in the pharmaceutical industry—An assessment of sustainability maturity and effects of sustainability measure implementation on supply chain security. *Corporate Social Responsibility and Environmental Management*, 31(1), 224–242. https://doi.org/10.1002/csr.2564

Banga, C., & Gobind, J. (2025). Implementation of sustainability in human resource management: A literature review. *SA Journal of Human Resource Management*, 23. https://doi.org/10.4102/sajhrm.v23i0.2741

Bhale, U., & Bedi, H. S. (2023). SEM model fit indices meaning and acceptance of model literature support. SSRN. https://doi.org/10.2139/ssrn.4659352

Burritt, R. L., Hahn, T., & Schaltegger, S. (2002). Towards a comprehensive framework for environmental management accounting: Links between business actors and environmental management accounting tools. *Australian Accounting Review*, 12(27), 39–50. https://doi.org/10.1111/j.1835-2561.2002.tb00202.x

Cadez, S., & Guilding, C. (2008). An exploratory investigation of an integrated contingency model of strategic management accounting. *Accounting, Organizations and Society*, 33(7–8), 836–863. https://doi.org/10.1016/j.aos.2008.01.003

Campos-García, I., Alonso-Muñoz, S., González-Sánchez, R., & Medina-Salgado, M. S. (2024). Human resource management and sustainability: Bridging the 2030 agenda. *Corporate Social Responsibility and Environmental Management*, 31(3),2033–2053. https://doi.org/10.1002/csr.2680

Carballo-Penela, A., Ruzo-Sanmartín, E., Álvarez-González, P., & Paillé, P. (2023). How do GHRM practices influence firms' economic performance? A meta-analytic investigation of the role of GSCM and environmental performance. *Journal of Business Research*, 165, 113984. https://doi.org/10.1016/j.jbusres.2023.113984

Chali, B. D., & Lakatos, V. (2024). The impact of human resource management on financial performance: A systematic review in cooperative enterprises. *Journal of Risk and Financial Management*, 17(10), 439. https://doi.org/10.3390/jrfm17100439

Chaudhuri, A., & Jayaram, J. (2019). A socio-technical view of performance impact of integrated quality and sustainability strategies. *International Journal of Production Research*, 57(5), 1478–1496. https://doi.org/10.1080/00207543.2018.1492162

Chenhall, R. H. (2003). Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations and Society*, 28(2–3), 127–168. https://doi.org/10.1016/S0361-3682(01)00027-7

Chiappetta Jabbour, C. J., Mauricio, A. L., & Jabbour, A. B. L. de S. (2017). Critical success factors and green supply chain management proactivity: Shedding light on the human aspects of this relationship based on cases from the Brazilian industry. *Production Planning & Control,* 28(6–8), 671–683. https://doi.org/10.1080/09537287.2017.1309705

Christ, K. L., & Burritt, R. L. (2013). Environmental management accounting: The significance of contingent variables for adoption. *Journal of Cleaner Production,* 41, 163–173. https://doi.org/10.1016/j.jclepro.2012.10.007

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). *Routledge.* https://doi.org/10.4324/9780203771587

Contini, G., Grandi, F., & Peruzzini, M. (2025). Human-centric green design for automatic production lines: Using virtual and augmented reality to integrate industrial data and promote sustainability. *Journal of Industrial Information Integration*, 44, 100801. https://doi.org/10.1016/j.jii.2025.100801

Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology*, 25(3), 325–334. https://doi.org/10.1007/s10869-010-9181-6

Dang, L. A., Le, T. M. H., Le, T. H., & Pham, T. B. T. (2021). The effect of strategic management accounting on business performance of sugar enterprises in Vietnam. *Accounting,* 7(5), 1085–1094. https://doi.org/10.5267/j.ac.2021.2.031

Dasanayaka, C. H., Murphy, D. F., Nagirikandalage, P., & Abeykoon, C. (2021). The application of management accounting practices towards the sustainable development of family businesses: A critical review. *Cleaner Environmental Systems*, 3. https://doi.org/10.1016/j.cesys.2021.100064

Dasinapa, M. B. (2024). The integration of sustainability and ESG accounting into corporate reporting practices. *Advances in Applied Accounting Research*, 2(1), 13– 25. https://doi.org/10.60079/aaar.v2i1.167

Donaldson, L. (2001). The contingency theory of organizations. *SAGE.* https://doi.org/10.4135/9781452229249

Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. *Human Resource Management,* 56(4), 613–627. https://doi.org/10.1002/hrm.21792

Elshaer, I. A., Azazz, A. M. S., Kooli, C., Alqasa, K. M. A., Afaneh, J., Fathy, E. A., Fouad, A. M., & Fayyad, S. (2024). Resilience for sustainability: The synergistic role of green human resources management, circular economy, and green organizational culture in the hotel industry. *Administrative Sciences*, 14(11), 297. https://doi.org/10.3390/admsci14110297

Ercantan, O., & Eyupoglu, S. (2022). How do green human resource management practices encourage employees to engage in green behavior? Perceptions of university students as prospective employees. *Sustainability,* 14(3), 1718. https://doi.org/10.3390/su14031718

Esho, E., & Verhoef, G. (2020). A holistic model of human capital for value creation and superior firm performance: The strategic factor market model. *Cogent Business & Management,* 7(1), 1728998. https://doi.org/10.1080/23311975.2020.1728998

Fang, L., Shi, S., Gao, J., & Li, X. (2022). The mediating role of green innovation and green culture in the relationship between green human resource management and environmental performance. *PLOS ONE,* 17(9), e0274820. https://doi.org/10.1371/journal.pone.0274820

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research,* 18(1), 39–50. https://doi.org/10.1177/002224378101800104

Freihat, L., Al-Qaaida, M., Huneiti, Z., & Abbod, M. (2024). Green human resource management/supply chain management/regulation and legislation and their effects on sustainable development goals in Jordan. *Sustainability*, 16(7), 2769. https://doi.org/10.3390/su16072769

Garg, N., Priyadarshi, P., & Malik, A. (2024). Financial well-being: An integrated framework, operationalization, and future research agenda. *Journal of Consumer Behaviour,* 23(6), 3194–3212. https://doi.org/10.1002/cb.2372

Gerged, A. M., Beddewela, E., & Cowton, C. J. (2021). Is corporate environmental disclosure associated with firm value? A multi-country study of Gulf Cooperation Council firms. *Business Strategy and the Environment,* 30(1), 185–203. https://doi.org/10.1002/bse.2616

Gerhart, B., & Feng, J. (2021). The resource-based view of the firm, human resources, and human capital: Progress and prospects. *Journal of Management,* 47(7), 1796–1819. https://doi.org/10.1177/0149206320978799

Giama, E., & Papadopoulos, A. M. (2016). Carbon footprint analysis as a tool for energy and environmental management in small and medium-sized enterprises. *International Journal of Sustainable Energy,* 37(1), 21–29. https://doi.org/10.1080/14786451.2016.1263198

Gond, J. P., Grubnic, S., Herzig, C., & Moon, J. (2012). Configuring management control systems: Theorizing the integration of strategy and sustainability. *Management Accounting Research*, 23(3), 205–223. https://doi.org/10.1016/j.mar.2012.06.003

Guenther, E., Endrikat, J., & Guenther, T. W. (2016). Environmental management control systems: A conceptualisation and a review of the empirical evidence. *Journal of Cleaner Production*, 136, 147–171. https://doi.org/10.1016/j.jclepro.2016.02.043

Guerci, M., Longoni, A., & Luzzini, D. (2016). Translating stakeholder pressures into environmental performance – The mediating role of green HRM practices. *The International Journal of Human Resource Management*, 27(2), 262–289. https://doi.org/10.1080/09585192.2015.1065431

Gupta, A., & Jangra, S. (2024). Green human resource management and work engagement: Linking HRM performance attributions. *Sustainable Futures,* 7, 100174. https://doi.org/10.1016/j.sftr.2024.100174

Haddock-Millar, J., Sanyal, C., & Müller-Camen, M. (2016). Green human resource management: A comparative qualitative case study of a United States multinational corporation. *The International Journal of Human Resource Management,* 27(2), 192–211. https://doi.org/10.1080/09585192.2015.1052087

Hadi, A. A., Alnoor, A., & Abdullah, H. O. (2018). Socio-technical approach, decision-making environment, and sustainable performance: Role of ERP systems. *Interdisciplinary Journal of Information, Knowledge, and Management,* 13, 397–415. https://doi.org/10.28945/4149

Hair, J., & Alamer, A. (2022). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. https://doi.org/10.1016/j.rmal.2022.100027

Hajj Hussein, S., & Bou Zakhem, N. (2024). The impact of green human resource management practices on brand citizenship behavior and employee turnover intention: A mixed methods approach. *Sustainability,* 16(15), 6528. https://doi.org/10.3390/su16156528

Harney, B. (2016). Contingency theory. In Encyclopedia of human resource management. *Edward Elgar*. https://doi.org/10.4337/9781800378841.C.19

Hasan, S. A. S., Waghule, S. N., & Hasan, M. B. (2024). Linking environmental management accounting to environmental performance: The role of top management support and institutional pressures. *Cogent Business & Management,* 11(1). https://doi.org/10.1080/23311975.2023.2296700

Hauashdh, A., Nagapan, S., Jailani, J., & Gamil, Y. (2024). An integrated framework for sustainable and efficient building maintenance operations aligning with climate change, SDGs, and emerging technology. *Results in Engineering,* 21, 101822. https://doi.org/10.1016/j.rineng.2024.101822

He, W., Mushtaq, N., & Jan, L. (2024). Unlocking the dual black box of GHRMP & EGOC for sustainable environmental performance in developing economies: Can green workplace behavior and green passion transmit the real change? *Environment, Development and Sustainability*, 26, 16025–16055. https://doi.org/10.1007/s10668-023-03286-x

Henri, J. F., & Journeault, M. (2010). Eco-control: The influence of management control systems on environmental and economic performance. *Accounting, Organizations and Society,* 35(1), 63–80. https://doi.org/10.1016/j.aos.2009.02.001

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Humairah, K. A., Irawan, A., Ibrahim, M. B. H., Yendra, Y., & Rasyid, A. (2023). Crafting effective HRM strategies for enhancing organizational performance and employee engagement. *Advances in Human Resource Management Research*, 1(3), 126–136. https://doi.org/10.60079/ahrmr.v1i3.183

Irawan, N., Esthi, R., Wijayanti, I., Widodo, Z., & Darmaningrum, K. (2023). Unlocking organic agroindustry employee eco-innovation: Role of green product knowledge and green transformational leadership. *Indonesian Journal of Economics, Social, and Humanities*, 5(3), 204–222. https://doi.org/10.31258/ijesh.5.3.204-222

Issa, M. S. B. (2023). Factors of stability and sustainable development in Jordan in its first centenary 1921–2021 (an analytical descriptive study). *Heliyon,* 9(11), e20993. https://doi.org/10.1016/j.heliyon.2023.e20993

Jabbour, C. J. C. (2011). How green are HRM practices, organizational culture, learning and teamwork? A Brazilian study. *Industrial and Commercial Training*, 43(2), 98–105. https://doi.org/10.1108/00197851111108926

Jabbour, C. J. C., & Jabbour, A. B. L. de S. (2016). Green human resource management and green supply chain management: Linking two emerging agendas. *Journal of Cleaner Production,* 112, 1824–1833. https://doi.org/10.1016/j.jclepro.2015.01.052

Jabbour, C. J. C., Santos, F. C. A., & Nagano, M. S. (2013). Green teams: Understanding their roles in the environmental management of companies located in Brazil. *Journal of Cleaner Production,* 46, 58–66. https://doi.org/10.1016/j.jclepro.2012.09.018

Jackson, S. E., Renwick, D. W. S., Jabbour, C. J. C., & Muller-Camen, M. (2011). State-of-the-art and future directions for green human resource management: Introduction to the special issue. *German Journal of Human Resource Management,* 25(2), 99–116. https://doi.org/10.1177/239700221102500203

Joshi, A., Kataria, A., Rastogi, M., Beutell, N. J., Ahmad, S., & Yusliza, M. Y. (2023). Green human resource management in the context of organizational sustainability: A systematic review and research agenda. *Journal of Cleaner Production,* 430, 139713. https://doi.org/10.1016/j.jclepro.2023.139713

Journeault, M. (2016). The influence of the eco-control package on environmental and economic performance: A natural resource-based approach. *Journal of Management Accounting Research,* 28(2), 149–178. https://doi.org/10.2308/jmar-51476

Kagzi, M., Dagar, V., Doytch, N., Krishnan, D., & Raj, M. (2024). Curbing environmental degradation to balance sustainable development: Evidence from China. *Environmental and Sustainability Indicators*, 24, 100465. https://doi.org/10.1016/j.indic.2024.100465

Kamboj, J., & Anthonysamy, E. (2024). Mapping the green human resource management practices: A systematic scoping review and its implications for employees' well-being. *Human Systems Management*, 43(6), 932–970. https://doi.org/10.3233/HSM-230183

Kutaula, S., Chowdhury, S., Gillani, A., Budhwar, P. S., & Dey, P. K. (2024). Linking HRM with sustainability performance through sustainability practices: Unlocking the black box. *British Journal of Management*. https://doi.org/10.1111/1467-8551.12861

Latan, H., Chiappetta Jabbour, C. J., & de Sousa Jabbour, A. B. L. (2018). 'Whistleblowing triangle': Framework and empirical evidence. *Journal of Business Ethics,* 160(1), 189–204. https://doi.org/10.1007/s10551-018-3862-x

Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Wamba, S. F., & Shahbaz, M. (2018). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of Cleaner Production,* 180, 297–306. https://doi.org/10.1016/j.jclepro.2018.01.106

Maas, K., Schaltegger, S., & Crutzen, N. (2016). Advancing the integration of corporate sustainability measurement, management and reporting. *Journal of Cleaner Production,* 133, 859–862. https://doi.org/10.1016/j.jclepro.2016.06.006

Majuri, M., & Halonen, N. (2020). Capability building through dynamic capabilities and organizational learning. In W. Leal Filho, A. M. Azul, L. Brandli, P. G. Özuyar, & T. Wall (Eds.), *Responsible consumption and production,* 1–15. Springer. https://doi.org/10.1007/978-3-319-95726-5_2

Mansour, M. (2023). The influences of environmental awareness on green performance. *Global Journal of Environmental Science and Management,* 9(4), 899–914. https://doi.org/10.22035/gjesm.2023.04.16

Masri, H. A., & Jaaron, A. A. (2017). Assessing green human resources management practices in Palestinian manufacturing context: An empirical study. *Journal of Cleaner Production,* 143, 474–489. https://doi.org/10.1016/j.jclepro.2016.12.087

Mohammad, S., Sağsan, M., & Şeşen, H. (2024). The impact of "learning organizations" on innovation: The mediating role of "employee resilience" and work engagement. *SAGE Open*, 14(4). https://doi.org/10.1177/21582440241289185

Nik Abdullah, N. H., Krishnan, S., Mohd Zakaria, A. A., & Morris, G. (2022). Strategic management accounting practices in business: A systematic review of the literature and future research directions. *Cogent Business & Management*, 9(1). https://doi.org/10.1080/23311975.2022.2093488

O'Donohue, W., & Torugsa, N. (2016). The moderating effect of 'Green' HRM on the association between proactive environmental management and financial performance in small firms. *The International Journal of Human Resource Management,* 27(2), 239–261. https://doi.org/10.1080/09585192.2015.1063078

Ojra, J., Opute, A. P., & Alsolmi, M. M. (2021). Strategic management accounting and performance implications: A literature review and research agenda. *Future Business Journal,* 7, 64. https://doi.org/10.1186/s43093-021-00109-1

Okunhon, P. T., & Ige-Olaobaju, A. Y. (2024). Green human resource management: Revealing the route to environmental sustainability. In I. Ganiyu, O. Olarewaju, A. Ige-Olaobaju, & S. Atiku (Eds.), Waste management and life cycle assessment for sustainable business practice, 115–134. *IGI Global.* https://doi.org/10.4018/979-8-3693-2595-7.ch006

Ortiz-Martínez, E., Marín-Hernández, S., & Santos-Jaén, J. M. (2023). Sustainability, corporate social responsibility, non-financial reporting and company performance: Relationships and mediating effects in Spanish small and medium sized enterprises. *Sustainable Production and Consumption,* 35, 349–364. https://doi.org/10.1016/j.spc.2022.11.015

Otley, D. (2016). The contingency theory of management accounting and control: 1980–2014. *Management Accounting Research*, 31, 45–62. https://doi.org/10.1016/j.mar.2016.02.001

Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study. *Journal of Business Ethics,* 121(3), 451–466. https://doi.org/10.1007/s10551-013-1732-0

Paillé, P., Valéau, P., & Renwick, D. W. (2020). Leveraging green human resource practices to achieve environmental sustainability. *Journal of Cleaner Production,* 260, 121137. https://doi.org/10.1016/j.jclepro.2020.121137

Papademetriou, C., Anastasiadou, S., Belias, D., & Ragazou, K. (2025). Integrating sustainability into human resource management: Building a greener workforce for the future. *Sustainability,* 17(3), 1113. https://doi.org/10.3390/su17031113

Perez, J. A. E., Galindo, S. M., Farooq, M., Ejaz, S., Ahmed, S., & Ejaz, F. (2024). Examining pro-environmental behavior through green human resource management and green innovation moderating role of environmental strategy. *Asia Pacific Management Review*, 100345. https://doi.org/10.1016/j.apmrv.2024.100345

Pham, N. T., Hoang, H. T., & Phan, Q. P. T. (2020). Green human resource management: A comprehensive review and future research agenda. *International Journal of Manpower,* 41(7), 845–878. https://doi.org/10.1108/IJM-07-2019-0350

Pham, N. T., Tučková, Z., & Jabbour, C. J. C. (2019). Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behavior in hotels? A mixed-methods study. *Tourism Management,* 72, 386–399. https://doi.org/10.1016/j.tourman.2018.12.008

Ployhart, R. E., & Vandenberg, R. J. (2010). Longitudinal research: The theory, design, and analysis of change. *Journal of Management,* 36(1), 94–120. https://doi.org/10.1177/0149206309352110

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology,* 63, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Pondeville, S., Swaen, V., & De Rongé, Y. (2013). Environmental management control systems: The role of contextual and strategic factors. *Management Accounting Research*, 24(4), 317–332. https://doi.org/10.1016/j.mar.2013.06.007

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods,* 16(2), 93–115. https://doi.org/10.1037/a0022658

Pumiviset, W., & Suttipun, M. (2024). Sustainability and strategic management accounting: Evidence of green manufacturing in Thailand. *Cogent Business & Management*, 11(1). https://doi.org/10.1080/23311975.2024.2302794

Qian, W., Hörisch, J., & Schaltegger, S. (2018). Environmental management accounting and its effects on carbon management and disclosure quality. *Journal of Cleaner Production*, 174, 1608–1619. https://doi.org/10.1016/j.jclepro.2017.11.092

Rawashdeh, A. M. (2018). The impact of green human resource management on organizational environmental performance in Jordanian health service organizations. *Management Science Letters,* 8(10), 1049–1058. https://doi.org/10.5267/j.msl.2018.7.006

Ren, S., Cooke, F. L., Stahl, G. K., Fan, D., & Timming, A. R. (2023). Advancing the sustainability agenda through strategic human resource management: Insights and suggestions for future research. *Human Resource Management*, 62(3), 251–265. https://doi.org/10.1002/hrm.22169

Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. *International Journal of Management Reviews,* 15(1), 1–14. https://doi.org/10.1111/j.1468-2370.2011.00328.x

Renwick, D. W., Jabbour, C. J., Muller-Camen, M., Redman, T., & Wilkinson, A. (2016). Contemporary developments in green (environmental) HRM scholarship. *The International Journal of Human Resource Management,* 27(2), 114–128. https://doi.org/10.1080/09585192.2015.1105844

Roscoe, S., Subramanian, N., Jabbour, C. J., & Chong, T. (2019). Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development. *Business Strategy and the Environment*, 28(5), 737–749. https://doi.org/10.1002/bse.2277

Rumman, M. A. A., & Alqudah, E. (2024). The impact of green HRM on lean soft practices implementation: A mediating role of organizational flexibility. *Global Journal of Flexible Systems Management,* 25, 705–731. https://doi.org/10.1007/s40171-024-00406-y

Saetang, W., Chai-Arayalert, S., Kajornkasirat, S., Kongcharoen, J., Saeliw, A., Puangsuwan, K., & Puttinaovarat, S. (2024). Eco-friendly office platform: Leveraging machine learning and GIS for carbon footprint management and green space analysis. *Sustainability,* 16(21), 9424. https://doi.org/10.3390/su16219424

Sarmad, M., Pirzada, M. A., & Iqbal, R. (2023). Fostering extra-role green behavior through green HRM practices: Mediating role of green absorptive capacity. *International Journal of Manpower*, 44(8), 1535–1552. https://doi.org/10.1108/IJM-10-2021-0592

Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology & Marketing,* 39(5), 1035–1064. https://doi.org/10.1002/mar.21640

Schaltegger, S., & Burritt, R. L. (2010). Sustainability accounting for companies: Catchphrase or decision support for business leaders? *Journal of World Business,* 45(4), 375–384. https://doi.org/10.1016/j.jwb.2009.08.002

Schaltegger, S., & Zvezdov, D. (2015). Gatekeepers of sustainability information: Exploring the roles of accountants. *Journal of Accounting & Organizational Change*, 11(3), 333–361. https://doi.org/10.1108/JAOC-10-2013-0083

Schaltegger, S., Etxeberria, I. Á., & Ortas, E. (2017). Innovating corporate accounting and reporting for sustainability – Attributes and challenges. *Sustainable Development*, 25(2), 113–122. https://doi.org/10.1002/sd.1666

Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change*, 150, 119762. https://doi.org/10.1016/j.techfore.2019.119762

Streukens, S., & Leroi-Werelds, S. (2016). Bootstrapping and PLS-SEM: A step-by-step guide to get more out of your bootstrap results. *European Management Journal,* 34(6), 618–632. https://doi.org/10.1016/j.emj.2016.06.003

Sult, A., Wobst, J., & Lueg, R. (2024). The role of training in implementing corporate sustainability: A systematic literature review. *Corporate Social Responsibility and Environmental Management,* 31(1), 1–30. https://doi.org/10.1002/csr.2560

Sun, H., Bahizire, G. M., Pea-Assounga, J. B. B., & Chen, T. (2024). Enhancing employee green performance through green training: The mediating influence of organizational green culture and work ethic in the mining sector. *Journal of Cleaner Production*, 449, 141105. https://doi.org/10.1016/j.jclepro.2024.141105

Taherdoost, H. (2016). Sampling methods in research methodology; How to choose a sampling technique for research. *International Journal of Academic Research in Management*, 5(2), 18–27. https://doi.org/10.2139/ssrn.3205035

Tahir, A. H., Umer, M., Nauman, S., Abbass, K., & Song, H. (2024). Sustainable development goals and green human resource management: A comprehensive review of environmental performance. *Journal of Environmental Management,* 370, 122495. https://doi.org/10.1016/j.jenvman.2024.122495

Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2018). Green human resource management practices: Scale development and validity. *Asia Pacific Journal of Human Resources*, 56(1), 31–55. https://doi.org/10.1111/1744-7941.12147

Veerasamy, U., Joseph, M. S., & Parayitam, S. (2023). Green human resource management and employee green behaviour: Participation and involvement, and training and development as moderators. *South Asian Journal of Human Resources Management*, 11(2), 277–309. https://doi.org/10.1177/23220937221144361

Wagenhofer, A. (2023). Sustainability reporting: A financial reporting perspective. *Accounting in Europe,* 21(1), 1–13. https://doi.org/10.1080/17449480.2023.2218398

Wang, S., Cheah, J.-H., Wong, C. Y., & Ramayah, T. (2024). Progress in partial least squares structural equation modeling use in logistics and supply chain management in the last decade: A structured literature review. *International Journal of Physical Distribution & Logistics Management,* 54(7/8), 673–704. https://doi.org/10.1108/IJPDLM-06-2023-0200

Wijethilake, C. (2017). Proactive sustainability strategy and corporate sustainability performance: The mediating effect of sustainability control systems. *Journal of Environmental Management,* 196, 569–582. https://doi.org/10.1016/j.jenvman.2017.03.057

Wijethilake, C., Munir, R., & Appuhami, R. (2018). Environmental innovation strategy and organizational performance: Enabling and controlling uses of management control systems. *Journal of Business Ethics,* 151(4), 1139–1160. https://doi.org/10.1007/s10551-016-3259-7

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management,* 27(6), 701–721. https://doi.org/10.1016/S0149-2063(01)00120-9

Wu, Y., & Tham, J. (2023). The impact of environmental regulation, Environment, Social and Government Performance, and technological innovation on enterprise resilience under a green recovery. *Heliyon,* 9(10), e20278. https://doi.org/10.1016/j.heliyon.2023.e20278

Yong, J. Y., Yusliza, M. Y., Ramayah, T., Chiappetta Jabbour, C. J., Sehnem, S., & Mani, V. (2020). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment,* 29(1), 212–228. https://doi.org/10.1002/bse.2359

Yusliza, M. Y., Othman, N. Z., & Jabbour, C. J. C. (2017). Deciphering the implementation of green human resource management in an emerging economy. *Journal of Management Development,* 36(10), 1230–1246. https://doi.org/10.1108/JMD-01-2017-0027

Yusliza, M.-Y., Norazmi, N. A., Jabbour, C. J. C., Fernando, Y., Fawehinmi, O., & Seles, B. M. R. P. (2019). Top management commitment, corporate social responsibility and green human resource management: A Malaysian study. *Benchmarking: An International Journal*, 26(6), 2051–2078. https://doi.org/10.1108/BIJ-09-2018-0283

Zhou, S., Tiruneh, W. A., & Legese, M. A. (2024). The effect of corporate social responsibility on environmental performance: The mediating role of green innovation and green human resource management. *International Journal of Emerging Markets,* 19(11), 3848–3868. https://doi.org/10.1108/IJOEM-02-2022-0211