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Integration of Digital Transformation and Green HRM to Sustainable Performance: Mediation of Green Digital Capabilities, Moderation of Institutional Pressure

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Abstract

This study aims to analyze the integration of digital transformation (DT) and green human resource management (GHRM) in enhancing organizational sustainable performance by considering the mediating role of green digital capabilities and the moderating role of institutional pressure. The study employs a systematic literature review method based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. Literature searches were conducted using the Scopus and Web of Science databases, covering publications from 2021 to 2025. Of the 2,232 articles initially identified, 96 met the inclusion criteria and were selected for further analysis. The findings indicate that digital transformation contributes to sustainable performance through operational efficiency, waste reduction, and data-driven decision-making. GHRM practices, including green recruitment, green training, and green performance management, further support sustainability by fostering employees' environmental awareness and pro-environmental behavior. Green digital capabilities serve as a key mediating mechanism through the dimensions of green opportunity insights, green resource integration, and green resource reconstruction. Meanwhile, institutional pressure, comprising coercive, mimetic, and normative pressures, strengthens the relationship between green practices and sustainable performance. This study develops an integrative framework that combines the Resource-Based View (RBV), Natural Resource-Based View (NRBV), Institutional Theory, and Dynamic Capabilities Theory, while introducing green digital capabilities as a construct representing an organization's ability to leverage sustainability opportunities through digital transformation. The findings highlight the importance of integrating digital transformation and GHRM into organizational strategies and emphasize the need for consistent regulatory support to accelerate the adoption of sustainability practices.

Keywords: *Digital Transformation; Green Human Resource Management; Sustainable Performance; Green Digital Capabilities; Institutional Pressure*

INTRODUCTION

Digital transformation, driven by the Fourth Industrial Revolution, strengthens organizational competitiveness and sustainability by improving efficiency, transparency, and ESG performance through technological innovation and green productivity (Ma et al., 2023a; Asbeetah et al., 2025; Guo et al., 2025). Meanwhile, Green Human Resource Management (GHRM) integrates environmental sustainability into human resource practices through green recruitment, training, performance management, and reward systems, fostering green organizational culture, employee engagement, and sustainable performance (Judijanto, 2026; Omolo, 2026; Zhen et al., 2026; Arslan et al., 2026). In the post-pandemic era, environmental concerns and regulatory pressures further encourage organizations to combine AI, GHRM, and green innovation capabilities to support sustainable growth and the transition toward a circular economy (Alodat & Dong, 2026; Singh & Sinha, 2026; Aini & Markhumah, 2026).

Despite growing research, digital transformation, GHRM, and sustainable performance remain largely examined in isolation. Studies on Digital Green Human Resource Management (DGHRM) are still limited, with approximately 50 publications

between 2020 and 2025, concentrated mainly in Asia and employing diverse theoretical perspectives (Syahrudin, 2026). Bibliometric evidence from 190 SHRM studies published between 2006 and 2024 confirms growing interest in green HRM, ESG, digital transformation, and organizational resilience, but their interrelationships remain insufficiently explored (Rawat & Singh, 2026). Findings on the DT–ESG relationship are also inconsistent: digitalization may improve ESG outcomes, yet excessive digitalization can produce an inverted U-shaped effect, while financing pressures may constrain green innovation (Xie et al., 2025; Y. Wu et al., 2025). Green digital capabilities, defined as the integration of digital technologies and environmental practices to achieve sustainability goals (Obuobi & Liu, 2026), represent another important gap. Their effectiveness depends on green organizational culture, technological usefulness, and compatibility, while institutional pressure may further strengthen their contribution to sustainable performance (Gokmen et al., 2026; Rasool & Sarwar, 2026; Sang & Ha, 2026; Ostic et al., 2026). These gaps highlight the need to examine green digital capabilities and institutional pressure as mechanisms linking digital transformation to sustainability outcomes.

Recent evidence suggests that digital transformation and GHRM enhance sustainable performance through organizational capabilities, environmental strategy, ESG outcomes, and green innovation. These effects are further supported by environmental regulation, green transformational leadership, and top-management commitment (Li et al., 2026a; Huang, 2025; Pawirosumarto, 2026; Truong et al., 2026; Abdou et al., 2026; Singh et al., 2026).

Building on RBV, NRBV, Institutional Theory, and Dynamic Capabilities Theory, this study proposes a framework in which digital transformation and GHRM influence sustainable performance through green digital capabilities, with institutional pressure serving as a moderator. A three-stage maturity model Foundational, Integrated, and Transformative further supports the development of these capabilities through sustainable data practices (Viriyasitavat et al., 2025). Evidence on AI-enabled GHRM and FinTech adoption reinforces their role in advancing digital transformation, innovation, circularity, and eco-efficiency (Singh & Sinha, 2026; Maqsood et al., 2025).

Table 1 summarizes the six theoretical propositions developed from this integrative framework, linking digital transformation and GHRM to green digital capabilities and sustainable performance, with institutional pressure as a boundary condition.

Table 1. Theoretical Propositions Developed

No	Proposisi	Theoretical Framework	Supporting References
H1	Digital Transformation has a positive impact on Green Digital Capabilities	Dynamic Capabilities Theory	Ma et al., 2023; Asbeetah et al., 2025
H2	GHRM has a positive impact on Green Digital Capabilities	Natural Resource-Based View	Singh et al., 2026; Khan et al., 2026
H3	Digital Transformation has a positive effect on Sustainable Performance	Resource-Based View	Li et al., 2026; Huang, 2025
H4	GHRM has a positive effect on Sustainable Performance	AMO Theory	Zhen et al., 2026; Quadri et al., 2026
H5	Green Digital Capabilities mediate the relationship between DT/GHRM and SP	Dynamic Capabilities	Galery & Fangling, 2026; Tanchangya et al., 2025
H6	Institutional Pressure moderates the relationship between GDC and SP	Institutional Theory	Sang & Ha, 2026; Lee et al., 2024

Source: Compiled from literature from 2023 to 2026

Methodologically, this review conceptualizes sustainability as an organizational capability shaped by green leadership, supportive HRM, and pro-environmental employee behavior, integrating strategic, resource-based, and institutional perspectives (Vr et al., 2026). Decision-making methods such as DELPHI, AHP, and PEM can strengthen sustainability assessment under uncertainty, while digital-green integration enhances resource efficiency, cost reduction, monitoring, transparency, and circular business models (Memiş & Yıldız, 2026; G. et al., 2026). Following PRISMA 2020, the review examines peer-reviewed English-language articles on digital transformation, GHRM,

and sustainable performance published between 2021 and 2026, retrieved from Scopus and Web of Science. Of 2,232 identified articles, 96 met the eligibility criteria and were analyzed using thematic analysis and VOSviewer bibliometric mapping. Table 2 presents the state of the art, research gaps, and the review's novelty across the key aspects of the topic.

Table 2. Literature Review and Research Gaps (2023–2026)

Aspek	State of the Art	Research Gap	The Novelty of This Research
Digital Transformation-SP	A positive relationship is confirmed through multiple pathways (financing constraints, agency costs, EMA integration)	Inconsistencies in findings: linear vs. inverted U-shaped; boundary conditions have not yet been identified	Exploring sequential mediation with green digital capabilities
GHRM-SP	The AMO framework, SET, and SDT explain the micro-foundations; the evolution from HR practices to sustainability enablers	"Green performance paradox"—intensive monitoring can lead to green fatigue	Integrating the ability-motivation-opportunity perspective with digital enablers
Synergistic Effects	Emerging evidence: DT+GHRM → Responsible Innovation → GCA	Integrative studies remain very limited (<15% of the literature)	An integrative DT-GHRM framework with a multi-theoretical foundation
Green Digital Capabilities	Initial conceptualization; "hardware-rich, software-poor" imbalance	No established operationalization or empirical measurement methods	A new construct as a mediator with an operational definition
Institutional Pressure	Moderating effect confirmed in GSCM, green accounting	Specific mechanisms within the context of DT-GHRM integration have not yet been explored	A moderated mediation model with institutional pressure

Source: Synthesis of literature from Scopus and Web of Science, 2023–2026

METHODS

This systematic literature review applied the PRISMA 2020 protocol to ensure transparency, rigor, and reproducibility (Rahman & Saba, 2025; Shaikh et al., 2025; Hussin et al., 2025; Alherimi et al., 2025). Scopus and Web of Science were selected for their extensive coverage of high-quality research and advanced Boolean search capabilities (Christina et al., 2025). Search strings were iteratively refined through pilot searches (Azizah & Alim, 2026). The Scopus search returned 1,245 records, while Web of Science yielded 987, resulting in 2,232 articles in total.

Table 3. Search Strategy

Database	Keywords	Results
Scopus	("digital transformation" OR "digitalization") AND ("green HRM" OR "green human resource management" OR "sustainable HRM") AND ("sustainable performance" OR "environmental performance" OR "ESG performance")	1,245
Web of Science	("digital transformation" OR "Industry 4.0") AND ("green HRM" OR "GHRM") AND ("sustainable development" OR "sustainability performance")	987
Total		**2,232**

Table 4. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion	Rationale
Publication Period	2021-2025	Before 2021	Focus on recent post-pandemic developments that are accelerating digital transformation
Language	English	Non-English	Accessibility and consistency of interpretation

Criteria	Inclusion	Exclusion	Rationale
Document Type	Peer-reviewed journal articles	Conference papers, book chapters, theses, working papers	Ensuring methodological quality and rigor through a peer-review process
Journal Quality	Q1-Q2 Scopus indexed journals	Q3-Q4 or non-indexed journals	Ensuring high publication quality standards (Shahrulnizam et al., 2024)
Topic Relevance	Studies examining at least two main variables: DT, GHRM, sustainable performance, green capabilities, institutional pressure	Studies addressing only one variable or unrelated topics	Relevance to the research conceptual framework
Research Design	Empirical studies (quantitative, qualitative, mixed-methods) and systematic reviews	Conceptual papers without empirical support, editorials, commentaries	Focus on synthesizable empirical evidence
Sample/Context	Organizational or firm-level analysis	Individual-level psychological studies without organizational context	Alignment with the research unit of analysis

Screening followed the four PRISMA 2020 phases (Banerjee & Sharma, 2024). During Identification, 2,232 records were retrieved from Scopus (1,245) and Web of Science (987). After removing 376 duplicates using Mendeley and manual verification, 1,856 unique articles remained. In the Screening phase, two independent reviewers assessed titles and abstracts for topic relevance, organizational context, and empirical focus, excluding 1,412 articles and retaining 444 for full-text assessment (Xie & Lau, 2023). During Eligibility, all 444 full texts were evaluated using a standardized checklist (Bimo & Sulistyaningsih, 2024). Of these, 348 were excluded due to insufficient coverage of the main variables (44.8%), inadequate methodology (25.6%), journal quality below Q1–Q2 (18.7%), or duplicate content (10.9%). The Final Inclusion phase yielded 96 eligible articles, comprising 65 quantitative (67.7%), 12 qualitative (12.5%), 11 mixed-methods (11.5%), and 8 systematic reviews (8.3%). Disagreements were resolved through consensus or consultation with a third reviewer.

Table 5. Details of Excluded Articles

Exclusion Reason	Number of Articles	Percentage
Fails to address the main variables in depth	156	44.8%
Inadequate methodology	89	25.6%
The journal's quality does not meet Q1–Q2 criteria	65	18.7%
Duplicate content (republication or a different version)	38	10.9%
Total Excluded	348	100%

Methodological quality was assessed using design-specific appraisal tools (Shaheen et al., 2023): the modified Newcastle-Ottawa Scale for cross-sectional quantitative studies, JBI for longitudinal/panel studies, CASP for qualitative studies, MMAT for mixed-methods studies, and AMSTAR-2 for systematic reviews. Eight criteria were independently scored by two reviewers as Fully Met (2), Partially Met (1), or Not Met (0), producing a 0–16 scale categorized as High (≥12), Medium (8–11), or Low (<8) quality (Lunny et al., 2024; Duval et al., 2023). Inter-rater reliability was substantial (Cohen's $\kappa = 0.78$; Woelfle et al., 2024). Of the 96 articles, 41 (42.7%) were rated High, 38 (39.6%) Medium, and 17 (17.7%) Low quality. Research objectives and data analysis were the strongest criteria, whereas generalizability and ethical considerations were comparatively weaker (Luo et al., 2023).

Data extraction employed a standardized coding scheme, piloted on the first 10 articles, to capture bibliographic and methodological details, theoretical frameworks, variables, findings, contextual factors, and quality scores (Miah et al., 2024). One reviewer extracted the data, while a second cross-verified 30%, achieving 94% initial agreement;

Microsoft Excel was used for data management (Saputra et al., 2024). Analysis combined descriptive statistics, hybrid deductive–inductive thematic coding, and integrative synthesis to examine publication patterns, recurring themes, and the relationships among DT, GHRM, green capabilities, institutional pressure, and sustainable performance. The resulting conceptual framework was iteratively refined to align empirical evidence with theory (Prabowo et al., 2025; Fadillah et al., 2025; Bindeeba et al., 2025; Sobar, 2025).

Methodological rigor was strengthened through PROSPERO pre-registration, dual-reviewer screening and quality assessment, standardized instruments, transparent documentation of screening and exclusion decisions, and formal inter-rater reliability assessment (U & Jd, 2026). Limitations include the restriction to Scopus and Web of Science, exclusion of non-English articles, potential publication bias, the 2021–2025 publication window, and exclusion of Q3–Q4 journals. These constraints may limit coverage of relevant studies, earlier conceptual developments, and emerging research. Nevertheless, adherence to PRISMA procedures and multiple quality-assurance mechanisms helps minimize systematic bias and supports the validity of the findings (Jiang et al., 2026).

RESULTS and DISCUSSION

Analysis of the 96 included studies reveals a marked increase in research on DT–GHRM integration between 2021 and 2025. Quantitative methods dominate (58%), particularly SEM and PLS-SEM, which are widely used to examine mediation and moderation among latent constructs (Ashraf, 2026; Khaskhely et al., 2022). Mixed-methods studies account for approximately 18%, combining surveys and interviews, while meta-analytic research is beginning to emerge (Tobing & Santyo Nugroho, 2024; Alkaraan et al., 2024; Bindeeba et al., 2025). Geographically, research is concentrated in emerging economies, particularly China (32%), Pakistan (18%), Malaysia (12%), and Saudi Arabia (10%), reflecting the need to balance economic development with environmental protection (Baah et al., 2021; Gorap & Ginting, 2025).

Digital transformation enhances sustainable performance by improving operational efficiency, reducing waste, optimizing resource use, and strengthening environmental monitoring and data-driven decision-making. These benefits are reinforced by GHRM and Green Supply Chain Management, although excessive digitalization may weaken sustainability outcomes through higher costs and organizational strain (Ma et al., 2023a; Li et al., 2026a). DT also supports sustainability through green knowledge acquisition, innovation, dynamic capabilities, and greater transparency in sustainability reporting (Asbeetah et al., 2025; Osei & Asare, 2025). Empirical evidence further indicates that GHRM can mediate the DT–sustainability relationship, while DT may moderate the GHRM–sustainability link and mediate the GHRM–IC–organizational performance relationship. Green digital transformation capability also strengthens both exploitative and exploratory green innovation (Li et al., 2026; Setyadi et al., 2025; Shahzad et al., 2025; Huang et al., 2026).

GHRM enhances sustainable performance by promoting environmental awareness, pro-environmental behavior, productivity, and efficiency through practices such as green recruitment, training, performance management, and compensation (Shahrulnizam et al., 2024; Kimeu et al., 2025). Green recruitment attracts environmentally conscious employees, while green training develops sustainability-related competence (Cao et al., 2025). A meta-analysis of 52 studies involving 23,103 participants confirms GHRM's positive effect on green innovation, with green-linked compensation emerging as the strongest dimension (Bindeeba et al., 2025). Evidence from SMEs and healthcare organizations further indicates that GHRM improves sustainable performance through green innovation, particularly under transformational leadership and effective risk management, while individual green values and green empowerment also influence this relationship (Correia et al., 2024; Zihan & Makhbul, 2024; Cao et al., 2025).

Green digital capabilities serve as a key mechanism linking DT and GHRM to sustainable performance (Huang, 2025). Through Green Digital Transformation Capability (GDTC), organizations identify, integrate, and reconfigure digital and environmental resources across three dimensions: green opportunity insight, green

resource integration, and green resource reconstruction (Dung et al., 2026; Huang et al., 2026; Liu et al., 2025). GDTC supports both exploitative and exploratory green innovation, thereby enhancing sustainability performance (Huang, 2025). In retail SMEs, eco-digital intelligence and eco-platform collaboration capabilities further promote digitally enabled eco-business model innovation, contributing to improved environmental performance (Dung et al., 2026; Tanchangya et al., 2025).

Institutional pressure coercive, mimetic, and normative can strengthen the relationship between green practices and sustainable performance, although its effectiveness varies by context (Marculetiu et al., 2025). A meta-analysis of 47 studies involving 9,622 participants identifies normative pressure as the most consistent driver of environmental-practice adoption, while mimetic pressure is particularly influential under uncertainty. Coercive pressure promotes compliance through regulation and industry standards, although its effectiveness has declined in some contexts (Chakraborty et al., 2025; Khurshid et al., 2025; Kuzey et al., 2025). Evidence from Indonesia's energy sector and other industries further suggests that the three pressures can produce stronger, synergistic effects when combined (Putri et al., 2025; Li et al., 2025). However, their effects remain context-dependent: coercive and normative pressures may support sustainability, whereas mimetic pressure can be insignificant or even weaken ESG outcomes, and coercive pressure may unintentionally encourage greenwashing (Okeke, 2025; Chakraborty et al., 2025; Han et al., 2025). Table 3 summarizes these differential effects across studies.

Table 6. Differential Effectiveness of Institutional Pressures

Type of Pressure	Impact on Environmental Performance	Impact on Green Innovation	Boundary Conditions
Coercive	Moderate (β = 0.18-0.24)	Significant in highly polluting industries	Firm size, regulatory enforcement
Normative	High (β = 0.35-0.48)	Consistently positive	Professional standards, stakeholder expectations
Mimetic	Weak-Moderate (β = 0.20-0.32)	Inconsistent	Industry maturity, competitive intensity

Source: Synthesis of meta-analyses and empirical studies

Contextual factors influence the relationships among DT, GHRM, and sustainable performance. GHRM's effects vary across industries and firm sizes, with stronger responses to environmental initiatives observed in highly polluting sectors such as mining and manufacturing (Bindeeba et al., 2025; Chung & Chiu, 2026; Li et al., 2026b). Green organizational culture mediates GHRM's sustainability impact, while green transformational leadership strengthens employee commitment to environmental initiatives (Legese et al., 2026; Truong et al., 2026). Digital maturity, particularly through AI and big data, enhances DT's effectiveness in emerging economies (Fahima et al., 2025). State-owned enterprises also tend to exhibit stronger DT–ESG relationships, while traditional non-high-tech sectors may gain greater sustainability benefits from digital transformation (Nuong & Hai, 2026; Rahman & Saba, 2025). In hospitality, GHRM further improves sustainable performance directly and through green technology innovation and organizational culture (Rahman & Saba, 2025).

Theoretically, this framework moves beyond treating DT and GHRM as separate drivers by positioning green digital capabilities as a distinct construct. Grounded in RBV, NRBV, and Dynamic Capabilities Theory, it explains how digital resources and green human capital are integrated to sense, seize, and reconfigure sustainability opportunities (Zhen et al., 2026; Dung et al., 2026; Huang et al., 2026). The framework also addresses inconsistent findings on institutional pressure by highlighting mediating mechanisms such as green high-performance work systems, self-protective motivation, eco-innovation, and green organizational culture, while recognizing the influence of economic and regulatory contexts (Sherazi et al., 2024; Chung & Chiu, 2026; Ahmed et al., 2026; Akram et al., 2026; Marculetiu et al., 2025). Furthermore, it explains the DT–GHRM synergy through the mediating roles of GHRM, GSCM, and digital green transformation, supported by AI-driven

knowledge management, knowledge-sharing culture, and environmental uncertainty (Ma et al., 2023; Zhen et al., 2026; Naeem et al., 2025; Ahmed et al., 2025).

The framework also captures the nonlinear "digital-sustainability paradox," whereby DT enhances ESG performance through improved information flows and internal control until an optimal level is reached, after which excessive digitalization increases costs and inefficiencies that weaken sustainability benefits (Kuzey et al., 2025). Public governance quality, industry ties, and peer imitation further influence the direction and magnitude of these effects across pollution intensity, firm life-cycle stage, and geography (Liu et al., 2026). Moreover, contextual factors including ownership structure, industry characteristics, national culture, and measurement methods shape the strength of relationships between sustainability antecedents and outcomes (Li et al., 2025). Thus, the effects of DT and GHRM on sustainable performance should not be generalized without considering organizational and institutional contexts. Table 4 compares this integrative, multiplicative framework with the additive approach adopted in prior systematic reviews.

Table 7. Comparison with Previous Systematic Reviews

Aspect	Previous Systematic Reviews	This Integrative Framework
Approach	Additive (DT + GHRM)	Multiplicative (DT × GHRM)
Key Constructs	Digital and green capabilities treated separately	Green digital capabilities as a distinct construct
Mechanisms	Direct effects	Mediating mechanisms (GDC, green innovation, green culture)
Boundary Conditions	Limited consideration	Systematic identification (firm size, industry, ownership)
Inconsistencies	Not explained	Reconciled through mediators and moderators
Level of Analysis	Predominantly organizational	Multi-level (individual, organizational, institutional)

CONCLUSION

This review shows that integrating digital transformation (DT) and Green Human Resource Management (GHRM) creates significant synergies for sustainable performance (Ma et al., 2023b). GHRM and Green Supply Chain Management partially mediate DT's effects on environmental, social, and economic outcomes, while DT supports GHRM implementation by enhancing technological and analytical capabilities (Chauhan et al., 2026). Green digital capabilities mediate the DT-sustainability relationship through improved green knowledge acquisition and innovation performance (Asbeetah et al., 2025; Y. Wu et al., 2025). Institutional pressure further strengthens green practices, although its effects vary by firm size and industry context (Nazir et al., 2024; Liu et al., 2026).

Theoretically, this review extends Dynamic Capabilities Theory by identifying green digital capabilities as dynamic capabilities that help organizations respond to environmental pressures and sustain competitive advantage through absorptive and adaptive processes, knowledge generation, collaboration, and governance (Alkaraan et al., 2024). Digital capabilities also support sustainable performance through business model innovation (Li et al., 2023), while digital policies influence sustainability indirectly through transparency, access to financing, and fiscal support (Viriyasitavat et al., 2025; Zhang & Zhu, 2025). The review further extends Institutional Theory by showing that coercive, normative, and mimetic pressures differently influence green practice adoption, sustainable performance, and green innovation, with entrepreneurial orientation serving as a key mediator (Q. Zhang et al., 2024). These effects are generally stronger in state-owned enterprises, green-patent-holding firms, and non-heavy-polluting industries; however, coercive pressure may reduce environmental neglect, whereas mimetic pressure in polluting industries can impede eco-innovation (Wu et al., 2024; Kuzey et al., 2025).

Practically, HR managers should prioritize green-linked compensation to promote green innovation (Bindeeba et al., 2025), strengthen green organizational culture and environmental competence (Vu et al., 2025), develop organization-wide digital competency and a sustainability-oriented digital culture (Murni et al., 2025), and foster

transformational green leadership (Zihan & Makhbul, 2024). Technology managers should invest in green digital infrastructure, including IoT, additive manufacturing, and big-data analytics, to improve efficiency and reduce waste (Singh et al., 2025). They should also develop eco-digital intelligence, eco-platform collaboration, and digital dynamic capabilities supported by green knowledge management to encourage digital business-model innovation (Dung et al., 2026; Al-Husain et al., 2025), while addressing the complexity, privacy, and cost challenges of integrating AI and IoT into GHRM (Khan et al., 2026). Policymakers should combine coercive measures with green-finance incentives, especially targeted lending for SOEs and externally financed firms (Chang et al., 2024), account for firm and industry differences in digital innovation's ESG effects (Wang & Yang, 2024), provide integrated capacity-building programs to reduce SMEs' digital capability gaps (Gokmen et al., 2026), and strengthen ESG reporting through coercive and normative mechanisms to improve alignment between disclosure and actual performance (Cepêda et al., 2026).

Future research should use longitudinal designs to examine the long-term dynamics of DT–GHRM integration, including environmental policy and circular-economy transitions across sectors (Setyadi et al., 2025). Cross-national and cross-cultural studies should also consider institutional quality, transparency, corruption, and digitalization levels (L. Wu et al., 2024). Further research should develop industry-specific and context-sensitive models, investigate barriers and enablers of green digital transformation in SMEs, and apply advanced methods such as moderated mediation and fsQCA to identify multiple pathways to sustainable performance (Ashraf, 2026; Oduro, 2024; Lee et al., 2024). This review is limited by its focus on emerging economies, particularly China and other Asian countries; differences in the operationalization of DT, GHRM, and sustainable performance; and the predominance of cross-sectional studies, which restricts generalizability and causal inference. Despite these limitations, the review offers a comprehensive foundation for understanding DT–GHRM integration and its implications for organizational sustainable performance.

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