Chapter 16

Green HRM and Digital Transformation: A Sustainable Workforce Strategy

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Abstract

With rising environmental issues as well as the exponentially increasing speed of life, organizations are now incorporating Green Human Resource Management (Green HRM) and Digital Transformation to foster environmental sensitivity and effectiveness in workforce management. In this chapter, we explore the development of Green HRM, its contribution to corporate environmental responsibility, and the effects that emerging digital technologies like AI, blockchain, IoT, and cloud computing will have on HR practices. A literature review is further presented on Green HRM contribution to sustainability; digital adoption of HR tools; and theoretical frameworks (Resource Based View and Technology Acceptance Model). In addition, the chapter presents a proposed model on the integration of Green HRM strategies with digital HR solutions focusing on automation, paperless processes and smart workplaces. Challenges related to ethical concerns, uncertainties of data security risks, as well as barriers to adoption regarding digital transformation are also discussed. The Future Perspectives explore emerging trends of sustainable HR innovations, concluding with strategic recommendation to organizations to apply Green HRM practices based on technology and potential future research.

Keywords

Green HRM, Digital Transformation, Sustainable Workforce, AI in HRM, Cloud Computing, HR Automation, Employee Engagement, Environmental Sustainability, Green Recruitment, Corporate Social Responsibility (CSR).

1. Introduction

Green Human Resource Management (Green HRM) can be defined as an effective strategy of integrating HRM and environmental sustainability. It involves the acts, plans, and activities of adopting environmentally friendly frameworks in the HRM process to promote a sustainable workplace environment (Ahmad, 2015). Green HRM incorporates several activities such as paperless documentation and communication, conducting meetings through video conferencing, and favorable policies for talent management for sustainability (Arulrajah et al., 2015).

Green human resource management has advanced its sustainable workforce development and management by incorporating big data, artificial intelligence, and cloud computing as organizational enablers of digital transformation. These technologies enable energy-efficient HR activities, such as artificial intelligence for recruitment, automation of engagement solutions, and digital training, which helps reduce physical energy resources.

Organizations that implement Green HRM together with the digital age can achieve better performance, as green innovations and digital technologies create healthy, economical, and eco-friendly work environments (Zihan & Makhbul, 2024). The inclusion of sustainable HRM is not just the right thing to do, but rather more of the right thing to do in an organization, because it has been stated and supported that through sustainable HRM, an organization is able to build up its reputation and gain the engagement of employees (Mousa & Thaher, 2024).

The maintenance of sustainability within workforce management is a crucial factor in business sustainability and environmental conservation. Leveraging Green HRM practices prompts positive changes in employee conduct and increases environmentally conscious workplace behaviors (Nasim et al., 2024). A sustainable workforce can withstand fluctuations in business conditions and has a desire to work with organizations that practice environmental conservation (Chams & García-Blandón, 2019).

Additionally, high employee turnover contributes to the unsustainability of HRM strategies. Pascoe et al. (2021) noted that high rates of turnover reduce the continuity of evidence-based sustainability actions, a prologue for a sustainability-oriented HR policy. Introducing Green HRM policies, such as training in environmental conservation, eco-friendly WSM designs, and telecommuting options, benefits the company by keeping employees satisfied with environmentally focused organizations' policies and lowering operational expenses.

This study aims to discuss the role of Green HRM and digital transformation in the context of sustainable workforce management. It explores how Green HRM practices contribute to employee commitment and organizational robustness, and how digital tools such as AI, big data, and automation help. Finally, the chapter introduces more about the limitation, direction for future research, and implication for the business organization targeting to develop 'green' Human Resource Management system.

2. Literature review

Green Human Resource Management (GHRM) has emerged as a strategic approach aligning HRM practices with environmental sustainability. Ahmad (2015) underscored the importance of GHRM policies in the promotion of sustainable business, Arulrajah, Opatha and Nawaratne (2015) offered a literature review of the GHRM that pinpoint performance management, green recruitment, and training as major areas of green activity. Several studies conducted over the last few years, such as Zihan and Makhbul (2024), have also emphasized the relationship between green innovations and improvements in sustainable business performance. However, there are significant research limitations in identifying the need for GHRM to support long-term environmental and financial successes.

The implementation of technology in HRM has received significant attention in the literature, especially concerning AI, clouds, and automation. Research done by Zhang and Chen (2024) discussed the significance of digital transformation in HRM with a focus on the increase in productivity and effectiveness of decision-making. Alaghbari et al. (2024) also considered the role of Digital HRM in sustainability by exploring the role of technology in HRM practices. Nevertheless, research gaps remain regarding the sustainability of AI-driven HRM systems and their long-term impact on workforce planning.

Conceptual frameworks have been useful for examining GHRM and the adoption of digital technologies in HRM. The RBV has been extended to GHRM, as indicated by Imran et al. (2021), who connect green HR practices with sustainable performance and innovation. The technology acceptance model (TAM) has also been employed to analyze HRM digital transformation (Anjum & Islam, 2020; Sharif, Hussain, & Park, 2021); however, these models are still under-researched in terms of their applicability in different organizational settings.

Table 1. Summary of Key Studies in Green HRM and Technological Advancements

Year	Author(s)	Key Findings	Research Gap
2015	Ahmad	GHRM policies positively impact sustainability	Lack of empirical validation in diverse industries
2015	Arulrajah et al.	Identified GHRM practices such as green recruitment, training	Limited longitudinal studies on long-term effects
2017	Ullah	Integration of sustainability into HRM through green practices	Lack of quantitative studies measuring impact
2019	Chams & García-Blandón	Highlighted the role of HRM in achieving SDGs	Need for industry-specific studies

2021	Imran et al.	Linked GHRM with green innovation and sustainable performance	Need for further validation in non-tech industries
2022	Aboramadan	Green HRM influences employee engagement in academia	Limited focus on corporate organizations
2023	Bahuguna et al.	Bibliometric analysis of GHRM research trends	Need for practical implementation strategies
2024	Zihan & Makhbul	Green HRM and innovation drive sustainable performance	Requires case studies on successful implementations
2024	Zhang & Chen	Digital HRM enhances organizational efficiency	Need for empirical validation in sustainability context
2024	Alaghbari et al.	Examined AI and automation in HRM	Long-term impact assessment required
2024	Zeid & Louafi	AI enhances green HRM for sustainability	Need for integration frameworks

3. Conceptual Foundations of Green Human Resource Management (Green HRM)

Green Human Resource Management (Green HRM) is a management approach that incorporates the consideration of environmental issues into human resource management with the aim of promoting sustainability-conscious behaviors among employees. It is concerned with the reduction of the environmental footprint and the improvement of organizational viability (Ahmad, 2015).

Green HRM focuses on the execution of ideals for a sustainable environment, including low carbon impact and the efficient use of natural resources (Opatha, 2013). Some of these include sustainability, green leadership, and green employees. It concerns the ideals of sustainability where HR practices harmonize with environmental objectives by embracing green recruitment, training, and performance management (De Gao Bangwal & Tiwari, 2015). They concluded that green leadership enhances green decision-making by making managers adopt environmentally friendly behaviors in their management (Ren et al., 2018).

Employee engagement is defined as the kind of activities practiced at the workplace that aim to support environmentally friendly practices, such as the conservation of energy (Aboramadan, 2022). Green HRM is a new model that advances traditional human resource management functions. Traditionally, HRM was a general concept that aimed to improve workforce productivity, but the change occurred as companies embrace CSR and consider its impact on the environment (Bahuguna, Srivastava, & Tiwari, 2023).

The use of technology such as artificial intelligence in recruitment and the use of remote systems in Human Resource

management cuts the use of papers, as well as the carbon emissions that may be occasioned by travelling to different organizations (Ullah, 2017). Another element is green leadership, under which managers in the organization become positive examples to encourage environmental stewardship in the workplace (Deshwal, 2015).

The transformation towards a sustainable performance management system includes the consideration of environmental parameters in assessing employees' performance (Din et al., 2024). Green HRM serves to increase employee satisfaction and loyalty, and improve employees' productivity and work engagement by valuing organizational sustainability (Ahmad, 2015; Aboramadan, 2022). It enhances corporate image, differentiation, and its competitive edge by being green and appealing to green consumers and investors (32). Moreover, legal requirements promote environmental compliance and help minimize legal liabilities and costs (Bahuguna et al., 2023).

From an environmental perspective, Green HRM improves waste management, energy consumption, paperless HR systems, and remote work (Din et al., 2024). These strategies help organizations that incorporate green innovation into their HRM to maintain ecological equilibrium in the long run (Bangwal & Tiwari, 2015). Green HRM, therefore, presents itself as a strategic approach through which organizations incorporate sustainability into workforce management practices for an organization's overall success.

4. Digital Transformation in Human Resource Management: Innovations and Implications

Digital transformation in the context of the Human Resource Management (HRM) can be defined as the integration of new technologies into Human Resource work processes and decision-making in order to accomplish improvements in organizational operations. It proves helpful in transitioning from conventional manual HR practices to more advanced, data-driven, and integrated practices that are more effective and aligned with organizational goals (Zhang & Chen, 2024).

Such aspects include virtual hiring, systemic performance evaluation, virtual workforce management, and the employment of data-driven analytics in hiring and retaining talent (Sakarina et al., 2022). The following are some of the ways in which digital technologies are revolutionizing HRM. AI is currently applied in the areas of recruitment, retention of staff, and performance management through the analysis of big data and immediate feedback (Manoharan, 2024). Blockchain technology contributes to the security of employees' records, payroll systems, and accounting for credentials by providing transparency and reliability in the HR department systems (Gadzali et al., 2023). Moreover, due to cloud computing, the HR services are made available remotely which in turns promotes mobility and productivity in the workforce management (Alaghbari et al., 2024). The same way, the Internet of Things (IoT) can be used to monitor the productivity of the employees and their safety at the workplace (Sharma & Kohli, 2024).

Digital transformation has significantly altered traditional HR functions, replacing manual and paper-based processes with automated and technology-driven solutions. Digital HR tools have improved talent management by enabling real-time feedback, virtual training programs, and

AI-driven performance assessments (Sakarina et al., 2022). Moreover, automation in administrative tasks has reduced HR workload, allowing professionals to focus on strategic workforce planning and employee experience enhancement (Manoharan, 2024). The shift toward digital HRM has also facilitated the adoption of sustainable business practices, improving overall efficiency and organizational adaptability in a rapidly evolving business environment (Sharma & Kohli, 2024).

Overall, digital transformation in HRM is revolutionizing workforce management, increasing efficiency, and enabling organizations to remain competitive in the digital era.

5. The Intersection of Green HRM and Digital Transformation

The integration of digital transformation with Green Human Resource Management (Green HRM) has become essential for organizations seeking sustainable development. Digital technology advances help HR departments reduce resource usage, enhance productivity, and integrate best practices that reflect sustainable objectives and intents (Jain & Sharma, 2024). Through the incorporation of digital technology within organizational systems, it is possible to promote sustainability within the working environment as well as within the broader organizational human resource realm.

New developments like AI, automation, and Industry 4.0 solutions are impacting the process of HRM in a positive way as they preserve the environment. This paper aims to evaluate how AI enhances working HRM; as a result of efficient working, workforce wastage is eventually minimized, and resources are utilized optimally (Sova et al., 2023). The combination of digital HRM with circular economy makes sustainability even higher with respect to green recruitment, training and engagement of employees at the workplace (De et al., 2024). These serve to enhance a systematic approach to integrating HRM practices and environmental sustainability.

The utilization of information technology in the area of HRM has brought about a reduction in the use of document-driven processes. Digitalized payroll, online HR management and AI-based recruitment platforms reduce the use of paper and energy which reduces paper utilization saving energy (Abedin et al., 2024). Moreover, telecommunication courses and virtual learning make it possible to continue employee training and education without having to emit carbon from travels. These electronic human resource management methods not only boost efficiency, they also play a role in the green proposition. This advancement in the application of smart workplace technologies also enhances the position of Green HRM in corporate sustainability. Automation technologies in offices related to energy efficiency involve the use of artificial intelligence technologies to regulate lighting, heating, and cooling through data collected from occupancy sensors (Zeid & Louafi, 2024).

In addition, policies that allow remote work accompanied by digital collaboration tools decreased the need for commuting, saving useful carbon and enhancing employees' well-being. These strategies assist organizations in minimizing their impact on the environment without having to compromise on the work efficiency and company morale. When digital transformation is combined with Green HRM, several organization benefits can be realized, including environmental

sustainability and operational improvement. The integration of technology and sustainable HR management practices for organizations is essential to improve organizational sustainability while promoting environmental responsibility.

6. Proposed Model for Green HRM and Digital Transformation

Green Human Resource Management and digital transformation have arisen as practices that organizations would like to adopt as they strive to improve sustainability and harness better technology. Such a model is critical in helping organisations effectively implement digital HRM tools in the pursuit of sustainable HR practices. The following is the conceptual model developed for this study, which illustrates the nature of an association between Green HRM and digital transformation and explains what key components must be incorporated, how they should be enacted, and how the model can be tested for validity.

The proposed model has developed its conceptual foundation on the combination of digital transformation and Green HRM. It highlights how various digital technologies can be effectively deployed to support sustainability initiatives in the context of HRM. They focused their framework on inputs, processes, and outputs associated with green activities within an organisation. AI, cloud computing and automation make functions in HR operations less costly and environmentally friendly.

Key Components

Digital HR Tools – Technologies such as AI-driven recruitment systems, blockchain-based HR records, cloud-based employee management, and automation tools that minimize resource consumption.

Green HR Strategies – Policies and practices aimed at promoting environmental sustainability, including paperless HR processes, remote work strategies, and green employee engagement programs.

Sustainability Outcomes – The expected benefits of integrating digital transformation with Green HRM, such as reduced carbon footprint, improved energy efficiency, and enhanced workforce well-being.

Successful implementation of Green HRM delivers sustainable solutions when integrated with digital transformation tools for improvement of the HR department. Online human resource management techniques eliminate the use of paper-based records, big data analysis enhances strategic decisions, and incorporation of automation prevents the misuse of resources. Thus, there is a synergy between digital transformation and Green HRM: technology supports sustainability initiatives, while the latter motivates the use of appropriate digital solutions.

Proposed Model Structure

The model follows a structured flow from inputs to processes and outputs:

- Inputs: Digital HR technologies (AI, cloud computing, automation), organizational policies supporting sustainability initiatives.
- Process: Implementation of Green HRM strategies, including digital recruitment, remote work, energy-efficient workplace management, and AI-driven sustainability monitoring.

- Outputs: Workforce sustainability (employee well-being, remote work efficiency), environmental benefits (reduced paper use, lower carbon emissions), and enhanced employee engagement in green initiatives.

Implementation Roadmap

A stepwise approach is required for organizations to successfully integrate digital transformation into Green HRM.

1. Assessment Phase: Evaluate current HRM practices and identify areas for digital and green innovation.
2. Technology Integration: Implement AI, cloud computing, and automation tools to digitize HR functions.
3. Policy Development: Establish HR policies that align digital transformation with sustainability goals.
4. Training and Adoption: Educate employees on green practices and digital HR tools.
5. Monitoring and Optimization: Continuously track progress using data analytics to measure sustainability impact.

Validation and Feasibility

The positive implication is that the proposed model can be implemented for assessment in actual HRM environments through pilot studies. Large companies can have small test schemes of Green HRM supported by ICT and metrics based on sustainability, cost and employee involvement. This allows for further optimization of the relationships for scaling and broad applicability in the industry. The feasibility studies should determine whether or not the model that is proposed to be implemented is financially viable, as well as the obstacles that are likely to be encountered when implementing the model, so that it is practical and provides the best value for the company undergoing HR transformation. When combined with Green HRM, digital transformation becomes a powerful tool for creating a responsible, effective, and environmentally friendly workforce that is the basis for sustainable corporate development.
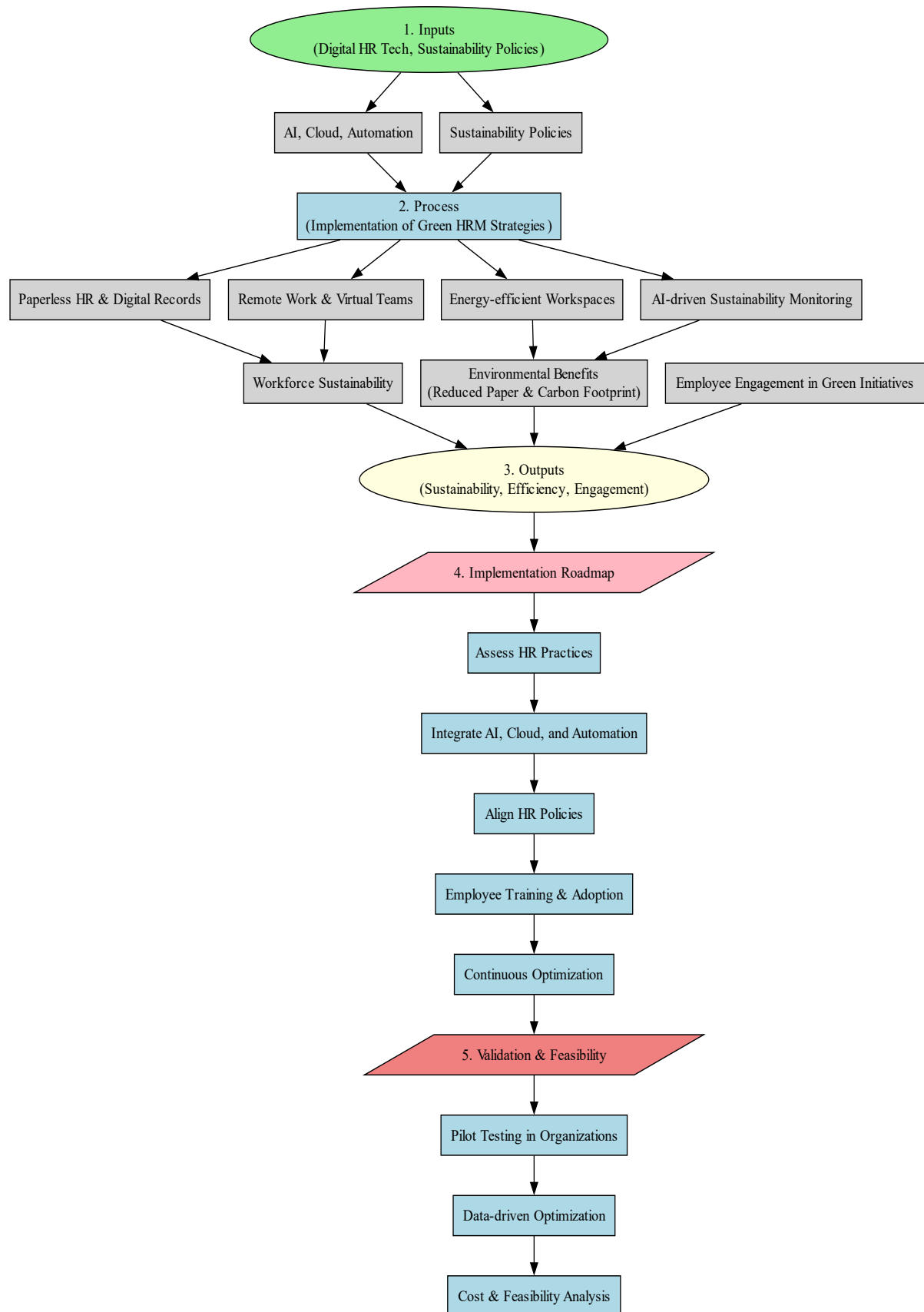
Fig. 1. Proposed Model for Green HRM and Digital Transformation by author

7. Challenges and Future Perspectives in Green HRM and Digital Transformation

Organizations that combine Green HRM with digital transformation face several barriers including expensive startup costs, team skill shortages and employee resistance to change. Most small to medium-sized enterprises struggle with adopting digital human resources strategies because they lack both funds and know-how about new technology options. To correctly link digital HR tools with eco-friendly efforts companies must transform their corporate mindset which neither develops quickly nor smoothly.

Using AI tech to run HR tasks combined with cloud tools and automation creates problems for keeping personal employee information secure and safe from theft. Workers sense uncertainty about AI-run HR choices since they assume they will encounter algorithmic problems or lose contact with human supervisors. Businesses must establish solid security standards to comply with regulations while building ethical AI management tools to help employees trust their human resources operations.

The future of Green HRM depends on AI to analyze sustainability data and IoT devices to watch workplaces while blockchain supports secure HR operations. Organizations will design sustainable digital workplaces while adding virtual team collaboration tools to lower their carbon emissions and add sustainability standards to their HR control methods. HRM will guide digital and environment changes by developing sustainable technology workers.

8. Conclusion

Companies that combine Green HRM strategies with digital advancement create a successful way to sustain their workforce management system. Organizations now apply Green HRM methods like hiring people for green jobs, training employees about sustainability, and managing employee performance sustainably. Digital transformation improves these activities with AI systems paired to cloud-based HR solutions that make operations faster and need less resources. Digital technologies help Green HRM initiatives work well within the workplace environment. The implementation of this strategy faces obstacles connected to data safety regulations and new technology usage standards that require government oversight. Researchers should test how Green HRM practices work over time and identify the benefits digital technologies bring to sustainability efforts. Organizations that link digital transformation to Green HRM practices will lead the market by creating supportive work environments for employees while saving resources and energy.

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