Leveraging Technology for Sustainability: The Role of HRIS and Green Software in Enhancing Green HRM Practices

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Abstract: This study examines how Human Resource Information Systems (HRIS) and green software can help make human resource management more environmentally friendly. As sustainability becomes a top focus for businesses, these digital technologies are becoming increasingly important. HRIS enables businesses to go paperless, hire and train people in an environmentally responsible way, work from home, and generally make HR operations more efficient. At the same time, green software uses less energy, keeps systems up and running, encourages employees to be more environmentally friendly, and makes the company look better for its environmental initiatives. The study gathered information from 100 HR and IT professionals working in private-sector firms in India to evaluate the advantages and obstacles to adopting these technologies. The findings reveal considerable benefits; nevertheless, participants also identified problems, including elevated implementation costs, data security issues, and organisational reluctance to technological change. Even with these problems, the results show that using HRIS and green software together greatly improves Green HRM operations. In general, the study finds that using these technologies together helps businesses stay in business for a long time and increase their operations. Companies can strengthen their environmental commitments by using HRIS and green software simultaneously. This will also improve HR services and create a culture of green responsibility.

1. Introduction

Sustainability has become a key component of organizational strategy in the twenty-first century, rather than a marginal concern. With increasing pressure from stakeholders, governments, and global institutions to reduce environmental impact, the incorporation of sustainability across all functional areas has become unavoidable. This is a paradigm shift that has prompted organizations to revisit old management practices and adopt more environmentally friendly practices. Human Resource Management (HRM), which used to be defined by recruitment, performance management, and employee relations, has been

recognized as a strategic force for environmental sustainability under the term Green Human Resource Management (Green HRM). Green HRM: The conceptual process of integrating environmental goals into HR functions to encourage employee actions that promote environmental sustainability and ensure the organization acts responsibly toward the planet [3].

The digital transformation and sustainability movements have converged, offering businesses a new opportunity to incorporate green concepts into their business processes [5]. Digitalisation enables organisations to eliminate time- and resource-consuming paper-based processes and to embrace systems that conserve resources in terms of energy, time, and costs [8]. One of the most effective digital tools in this change is Human Resource Information Systems (HRIS) and green software applications. HRIS automates and computerizes HR functions, including hiring, appraisal, training, and employee management, and minimizes the environmental footprint of HR departments. In the meantime, green software, which is energy-efficient and environmentally friendly, can help organizations optimize the use of their systems, minimize carbon emissions through their IT infrastructure, and establish a culture of technological sustainability [15].

1.1. Growing Significance of Sustainability in Business

Global climate accords, rising consumer demand for corporate responsibility, and environmental awareness have made sustainability a non-negotiable aspect of corporate governance. The United Nations Sustainable Development Goals (SDGs) focus on having businesses at the center of achieving climate action, responsible production, and sustainable industry. In turn, organizations worldwide are reconsidering their operational models to integrate sustainability across all their departments, starting with supply chain management, thereby developing human capital. In developing countries such as India, where industrialisation and digitalisation are accelerating, balancing economic progress and environmental responsibility is both a challenge and an opportunity. By adopting sustainable business practices, companies can meet regulatory requirements, enhance their brand image, recruit environmentally conscious employees, and gain a long-term competitive advantage. In that regard, HR departments can be viewed as a significant bridge between sustainability and workforce engagement. Through Green HRM, they will be able to promote environmentally friendly behaviour, develop sustainability-related performance metrics, and create an environment where employees are eager to contribute to environmental protection.

1.2. Technology as a Catalyst for Green HRM

Information technology has advanced rapidly, changing how organizations manage human resources. The implementation of HRIS can be viewed as a radical change in HR processes, moving from paper-based, manual processes to data-based, technology-enabled systems. HRIS brings together HR processes, including recruitment, training, payroll, and employee development, into a single digital system. Such integration not only enhances efficiency but also reduces the ecological footprint of HR operations by reducing paper waste, improving energy efficiency, and enabling remote access. For example, e-recruitment via HRIS enables firms to post job openings, filter applications, and interview potential employees online, eliminating the need for printed materials and reducing travel-related emissions. Equally, the use of e learning platforms and online performance evaluation systems facilitates virtual training and evaluation by minimizing the physical infrastructure. Sustainability is also enhanced by remote working, enabled by HRIS, which reduces carbon emissions from commuting. These changes indicate that HRIS is not just an administrative tool but also a pillar of eco-friendly HR practices. There is another, more recent, and equally relevant aspect of sustainable technology that is also expected to complement green software: HRIS. Green software is meant to reduce the energy usage and environmental impact of computing operations. It maximises server performance, minimises downtime, and improves system efficiency, resulting in lower energy bills and lower carbon emissions. Green software deployment not only helps achieve sustainability goals but also provides the organization with reputational and operational advantages. Moreover, when the two technologies run on green software infrastructure, their combined power increases, forming a digitally empowered, environmentally friendly HR ecosystem.

1.3. Integrating HRIS and Green Software for Sustainable Human Resource Practices

The convergence of HRIS and green software represents a new direction towards the realization of Green HRM goals. Organisations can combine digital effectiveness with environmental responsibility to ensure that both operational and technological levels are embedded in the concept of sustainability. HRIS makes HR processing easier, whereas green software ensures that HR processes are undertaken at minimal environmental cost. The combination will yield real-world results, including lower energy consumption, improved digital document management, reduced operational expenses, and greater employee involvement in sustainability programs. For example, cloud-based HRIS systems hosted in green data centres eliminate hardware dependencies and enable resource optimisation. Meanwhile, sustainability indicators, e.g., an employee's carbon footprint and energy consumption habits, could be measured using analytics tools embedded in HRIS and used to inform HR policies and performance reviews. These integrations will help HR departments create a data-driven culture of environmental accountability.

1.4. Role of HR Professionals in Promoting Sustainability

HR professionals are not limited to administrative roles; they can be strategic partners in advancing sustainability and corporate social responsibility. They are now mandated to develop green recruitment policies, establish environmental education programs, go paper-free, and incorporate environmental sustainability indicators into employee appraisals. By using HRIS, functions are digitised and can be scaled. Besides, green software ensures that the online backbone of these operations is energy-efficient and environmentally conscious. Employee engagement is another factor in the success of Green HRM. Sustainability cannot be driven by technology only unless employees are motivated to embrace green practices. With HRIS analytics, HR professionals can track employee involvement in sustainability initiatives, identify environmentally friendly behaviour, and develop a rewards system that reinforces environmentally responsible attitudes. Such convergence between human and technological resources enhances organisational commitment to sustainability.

1.5. Challenges and the Need for Strategic Implementation

The use of green software and HRIS in Green HRM does not come without its challenges, although it may seem so. The barriers include high implementation costs, cybersecurity risks, a lack of technical expertise, and organizational resistance to change. One of the issues many companies, especially those in developing regions, have difficulty justifying the financial investment in sustainable technologies is the question of why it is important. Moreover, the staff may be reluctant to switch to new digital platforms, preferring to manage their operations manually. Ensuring the privacy of data and the security of systems also requires robust governance structures and qualified IT specialists. These issues highlight the importance of strategic implementation and top management support. The leaders should be able to define a clear sustainability vision, devote sufficient resources, and provide proper training and motivation to the employees. The implementation of the HRIS and green software in HRM is successful when it fosters a culture of innovation, flexibility, and environmental awareness.

1.6. Rationale and Significance of the Study

Given the worldwide trend toward sustainable business environments, research on the connections among HRIS, green software, and Green HRM is timely and vital. Although earlier studies have examined Green HRM from a conceptual perspective, empirical research on how technology can directly improve green HR practices is limited. The gap this study addresses is understanding the role that HRIS and green software play in helping private-sector organizations in India become more environmentally sustainable in HRM. Employee perceptions, benefits, and challenges related to the adoption of these technologies are also examined in the research. The research results have implications for theory and practice. Academically, the study is a contribution to the established body of digital sustainability research that creates a connection between HR technology and environmental management. In practice, it provides HR and IT practitioners with insights into how technology can be used to achieve sustainability. These insights can also help policymakers and organizational leaders develop structures and policies that promote the adoption of eco-friendly HR technologies.

1.7. Objectives of the Study

- To investigate how green software and HRIS support ecologically friendly HRM procedures.
- To assess employee perceptions of the benefits and impact of HRIS and green software on Green HRM.
- To determine the main obstacles that businesses encounter when implementing green software and HRIS for sustainable HR procedures.

2. Literature Review

Al Mamun [1] observed that in the current business world, being environmentally responsible is no longer an option but a required part of company planning. From his research, it became clear that HRIS enabled Green HRM by enabling paperless processes, enabling remote work, and supporting environmentally friendly hiring and training methods. Through HRIS, sustainability metrics for employee appraisals were managed, and the company stayed in compliance with relevant rules. Even with early challenges such as costs, slow organisational change, and cybersecurity, Al Mamun [1] found that the long-term benefits, such as reduced resource use, more engaged staff, and a stronger company reputation, were much greater. Imron et al. [9] noted that traditional HRM is insufficient to address the challenges of green business. Their qualitative study found that traditional HRM practices could not meet the requirements of digital transformation and environmental sustainability. The study revealed that HRIS could solve these problems by providing digital assistance that improved the way Green HRM worked. The study showed that combining HRIS and GHRM improved workforce productivity, encouraged innovation, and aligned HR functions with the company's environmental commitments. Authors also explained that green business through HRIS is part of the Industrial Revolution 6.0, as new technologies will continue to change how companies and people work together.

Bijoria [4] analyzed the use of Artificial Intelligence (AI) in GHRM, with a special focus on online recruitment. The literature also examined the impact of digitalization on the recruitment process. He found that the old ways of recruiting needed a lot of manual work and depended heavily on paper. Because of advancements in AI and internet technology, companies can now use data-driven recruitment, making hiring more efficient and environmentally friendly. AI has been applied to assess job candidates, streamline the selection process, and ensure well-informed decisions. Even though Bijoria [4] was aware of problems such as algorithmic bias and reliance on technology, she believed AI could greatly improve the environment and hiring efficiency. Chanana and Singh [6] examined how GHRM can be leveraged with technology and highlighted the importance of employee engagement for sustainability. Digital innovation increased employee participation in workplace environmental initiatives. They learned that tools for teamwork, recognition, and workplace sustainability helped make sustainability a natural part of the company culture. It was also found that if digital tools are used in line with GHRM, they can help employees become more motivated and responsible in meeting sustainability goals.

At the same time, the authors noted several challenges, including employees growing tired of technology, leaders not fully engaging, and some workers hesitant to use new tools. Nevertheless, they found that actively using digital technology encouraged employees to stay with the company for longer. John and Pramila [10] studied how AI can strengthen Green Human Resource Management (Green HRM) in HR analytics. They focused on how AI-based HR analytics were successfully used to observe, predict, and boost environmentally friendly actions within companies. It was explained that AI was being used for decision-making in paperless recruitment, improved workforce planning, and more efficient resource use, thereby helping the company meet its environmental targets. In addition, the authors noted that using AI for analytics enabled them to monitor energy levels and reduce the company's environmental impact. By leveraging intelligent technologies, organizations aligned their HR activities with their sustainability goals. All in all, using AI in HR analytics helped the company become more efficient and made sustainability an essential part of its operations.

3. Research Methodology

3.1. Research Design

This study uses a descriptive, cross-sectional approach to examine the link between HRIS and green software adoption and the improvements in Green HRM practices. It is suitable because it collects all the data at once, capturing what people think, do, and experience regarding the use of sustainability and technology in HR.

3.2. Population and Sample

This study focuses on Human Resource professionals and Information Technology managers employed in mid-sized to large private-sector organizations in India that use HRIS and/or green software. They were chosen for their involvement in HR systems and initiatives that help the company save resources. Only respondents with relevant experience with HRIS or green software were included through purposive sampling. The response rate to the 150 emails and LinkedIn messages was 100 valid answers, which is considered a good rate for academic research. The study used participants from IT, manufacturing, banking, and services, thereby improving the applicability of the results to the private sector.

3.3. Data Collection

Primary data were collected by distributing a structured, self-administered questionnaire via Google Forms. The survey was made to measure how individuals score in three main areas:

- How much HRIS is being used in HR processes?
- The views and understanding of green software,
- The effect of these technologies on making HRM more sustainable and on employee behaviour.

There were 25 questions on the instrument, and each was measured on a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Experts reviewed the questionnaire's content and clarity. A pilot study with 10 participants was conducted, and changes to the survey were made based on their suggestions before the final release.

3.4. Data Analysis

Descriptive and inferential statistical techniques were used to analyse the collected data. The respondent demographics and trends in the use of HRIS and green software were summarized using descriptive statistics, including means, standard deviations, frequencies, and percentages.

4. Data Analysis and Interpretation

This section presents key findings on the use of HRIS and green software in Green HRM. It examines how much technology is used, what employees think of HRIS, and their opinions on how green software supports sustainability.

4.1. Adoption of HRIS and Green Software

Table 1 presents the number of organizations that report using HRIS and green software, along with their percentages.

Table 1: Adoption of HRIS and green software

Technology Used	Frequency	Percentage
Only HRIS	36	36%
Only Green Software	12	12%
Both HRIS and Green SW	42	42%
Neither	10	10%

The statistics show that 78% of organizations have implemented either HRIS or green software as part of their day-to-day processes. Interestingly, the survey showed that 42% of people use both HRIS and green software, reflecting a rise in the use of integrated solutions to improve sustainability. While a high number of organizations rely on HRIS (36%), a smaller proportion use green software alone (12%), suggesting that green software is still a new area. Only 10% of organizations do not use technology at all, indicating that more companies are now recognizing the importance of technology for responsible HRM (Figure 1).
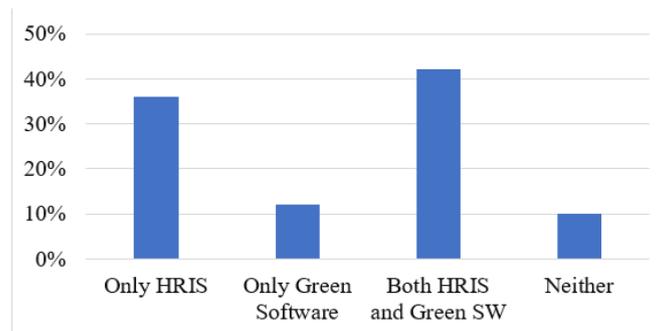

Figure 1: Adoption of HRIS and green software

4.2. Perceived Benefits of HRIS for Green HRM

Respondents are asked to evaluate how HRIS helps with green HRM practices.

Table 2: HRIS contributions to green HRM

HRIS Function	Mean Rating
Paperless recruitment	4.4
Online performance appraisals	4.2
Remote work facilitation	4.1
Green training (e-modules)	4.3
Carbon footprint tracking	3.9

As shown in Table 2, most respondents view HRIS as a helpful tool for green HRM practices. Paperless recruitment has the highest rating (mean = 4.4), indicating that many people favour using digital tools for hiring. Green training via e-modules (with a mean of 4.3) and online performance appraisals (with a mean of 4.2) are the next most common practices because they use technology to support both efficiency and the environment. The area of remote work facilitation (mean = 4.1) was also highly rated, indicating that HRIS supports employees in flexible and more environmentally friendly work arrangements. Carbon footprint tracking (mean = 3.9) received a slightly lower score, but it still reflects a good attitude, indicating more people are interested in using HRIS to oversee and control sustainability metrics. Ultimately, the research indicates that HRIS helps make HR practices more environmentally sustainable and supports the company's sustainability goals (Figure 2).
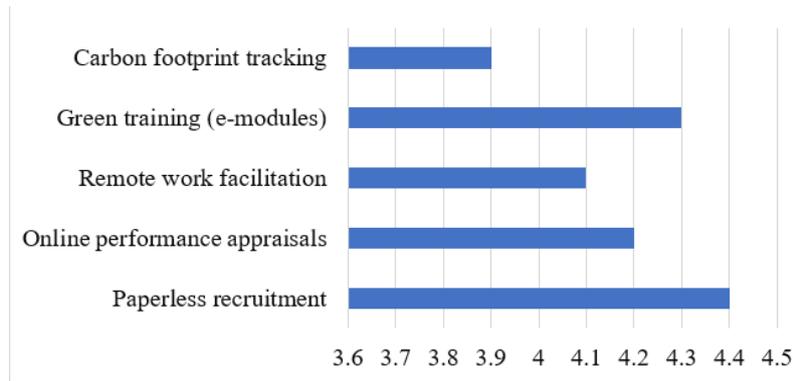
Figure 2: HRIS contributions to green HRM

4.3. Employee Perceptions of Green Software

The study also asked people about how green software affects the environment and how it is used.

Table 3: Green software impact

Statement	Mean Rating
Reduces system energy consumption	4.1
Minimizes server downtime and enhances performance	4.0
Encourages sustainable behaviour among staff	3.8
Facilitates efficient digital documentation	4.2
Contributes to the company's sustainability image	4.3

Table 3 shows that employees generally believe that using green software is important for both caring for the environment and running the business smoothly. Its biggest positive impact was on the company's sustainability image (4.3), which means green software helps build a better environmental reputation for the company. Next, the software reduces the effort required to create digital documents (4.2) and lowers energy use in systems (4.1), demonstrating that it helps optimise resource use. It was also noted that it helps keep servers up and running and boosts their performance (4.0), demonstrating its practical benefits. Even though encouraging sustainability among staff (3.8) was rated slightly lower, it still encourages a better mindset and culture among employees. In general, the results indicate that people see green software as important for both its technology and for helping the organization be more sustainable (Figure 3).
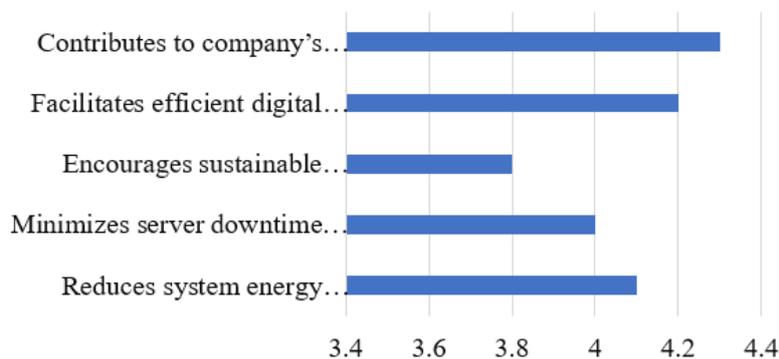

Figure 3: Green software impact

4.4. Challenges in Adopting HRIS and Green Software

Table 4 indicates that the most commonly mentioned challenge is the high cost of implementation (mean = 4.2), suggesting that many firms remain concerned about the cost.

Table 4: Perceived challenges in adopting HRIS and green software

Challenge Area	Mean Rating
High initial implementation cost	4.2
Data security and privacy concerns	4.1
Lack of technical expertise among staff	3.9
Resistance to change in the work culture	3.7
Limited top management support	3.8

Data privacy and security come in second (mean = 4.1), noting that digital tools in HR need to be handled safely. Many participants indicated that missing technical skills (mean = 3.9) and resistance to change in the culture (mean = 3.7) are reasons for the slow adoption. People also raised concerns about the lack of strong leadership support (mean = 3.8), which shows that managers need to be more involved in sustainable digital transformation. In other words, if we want to use these technologies well, we must overcome both the challenges in the system and those faced by people (Figure 4).
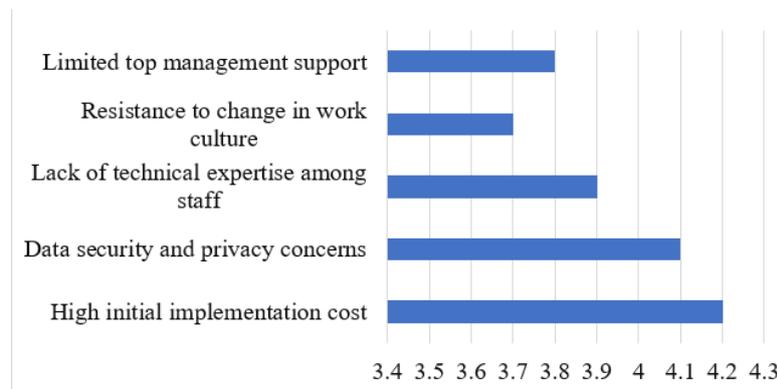

Figure 4: Perceived challenges in adopting HRIS and green software

5. Discussion and Findings

The results show that adopting these digital tools has greatly revolutionized how organizations manage their human resources in an environmentally friendly way. The study presented below is synthesised and discussed in the context of the recent literature, emphasising the relationships among technology adoption, organisational sustainability, and employees' perceptions.

5.1. Adoption of HRIS and Green Software in Organizations

The findings reveal that 78 per cent of organisations have adopted an HRIS, green software, or both. On their part, 42 per cent use both HRIS and green software simultaneously, 36 per cent use only HRIS, and a small minority (12 per cent) use only green software. This high adoption rate suggests that digital transformation is gradually reshaping HR functions in Indian organizations. The trend aligns with what Chawla et al. [7] and Sanjeev et al. [12] claim, i.e., that firms are quickly moving towards digital HR ecosystems to achieve greater operational sustainability and efficiency. It is worth noting that the prevalence of HRIS adoption over green software is explained by its longer history and a clear cost-benefit profile. HRIS has long been adapted into HR practices for more than 20 years, but green software is still a fairly new phenomenon in sustainable IT management. Nevertheless, the combination of HRIS and green software is a progressive step towards achieving the so-called digital sustainability balance between technological progress and environmental conservation. This dual application also indicates increased awareness among corporate leaders that technology-oriented HR management can contribute to economic and ecological objectives.

5.2. The Role of HRIS in Advancing Green HRM

The study finds that HRIS makes a significant contribution to many functions in green HRM, including paperless recruitment (mean = 4.4), green training through e-modules (mean = 4.3), and web-based performance appraisal (mean = 4.2). These discoveries align with Al Mamun [1], who indicated that HRIS enables paperless operations, minimizes administrative waste, and facilitates HR operations to advance ecological efficiency. This demonstrates that the HRIS is not only useful for administration but also that there are structures for integrating sustainability into HR's day-to-day practices. For example,

paperless recruitment systems help reduce paper use and eliminate physical documentation, thereby lowering carbon emissions. Virtual onboarding and training can also promote sustainability by minimizing energy use associated with travel and in-person training. Additionally, the facilitation of remote work (mean = 4.1) indicates that the HRIS enables flexible work models, which, in turn, lead to reduced fuel consumption and lower pollution. These results resonate with those of Imron et al. [9], who observed that HRIS refigures HR departments as centers of administration, overloaded with documents, into digitally viable systems aligned with environmental objectives. Interestingly, the study found that carbon footprint tracking (mean = 3.9) was rated slightly lower than other HRIS functions. This implies that organizations understand the environmental benefits of HRIS, but few have established effective mechanisms to measure the environmental impacts of their HR practices. The creation of metrics to quantify carbon emissions and resource use in HR functions may also enhance sustainability reporting and compliance with international sustainability standards, such as ISO 14001 and the Global Reporting Initiative (GRI).

5.3. Perceived Benefits of Green Software in Sustainability

The importance of green software is becoming increasingly critical in ensuring that HR digital systems are efficient and produce minimal environmental impact. The results indicate that workers believe green software can be useful across a range of areas. It positively affects the organization's sustainability image (mean = 4.3), provides the opportunity to perform efficient digital documentation (mean = 4.2), and reduces energy consumption in the system (mean = 4.1). These findings are consistent with those of Sepahvand et al. [13], who found that green IT and software projects help companies achieve sustainability by reducing energy consumption and adopting climate-friendly computing practices. Green software was also reported by employees to promote sustainable behaviour (mean = 3.8) and to increase performance through reduced server downtime (mean = 4.0). This indicates an increasing awareness among the workforce of the environmental effects of digital technologies. Al-Ghalabi et al. [2] state that when employees see the organization adopting energy-efficient technologies, they are more likely to participate in sustainability projects. Thus, adopting green software not only enhances the company's technical performance but also its environmental trustworthiness and employee involvement in green practices. Moreover, the synergy between HRIS and green software enhances the benefits of both. HRIS minimises material and energy waste during HR processes, whereas green software ensures the systems on which it runs are sustainable. This is consistent with the concept of green digital architecture, in which digital infrastructure and software development work together to achieve ecological efficiency.

5.4. Employee Perceptions and Organizational Culture

The positive attitude of employees towards the technology-based sustainability practices is an important result of the research. The respondents were very supportive of HRIS-based practices like e-learning and remote work. These habits not only enhance convenience but also align with employees' environmental values. According to Chanana and Singh [6], who proposed that sustainability-based digital tools help employees develop a sense of belonging and purpose, thereby increasing engagement and retention, these tools were found to be highly effective. The success of these technologies, however, depends greatly on organizational culture. Companies that develop a culture of environmental responsibility are likely to have an easier technology adoption and enhanced employee co-operation. Quite to the contrary, employees tend to resist sustainability initiatives when they are treated as mere compliance measures. Therefore, in this case, HR departments are forced to serve two purposes: introducing digital transformation and, at the same time, fostering a culture in which sustainability is viewed as a collective duty. Another aspect discovered by the study is that employees view HRIS and green software as tools that not only minimise environmental damage but also increase job satisfaction. These technologies enable HR professionals to focus on strategic and development aspects by eliminating paperwork in most cases and automating it. This shift from a clerical job to a strategic contribution will likely enhance organizational performance and employee morale.

5.5. Challenges in the Adoption of HRIS and Green Software

Despite the potential benefits, organisations face challenges when implementing HRIS and green software. The greatest barrier identified was the high cost of implementation (mean = 4.2). Many companies, especially small and medium-sized businesses (SMEs), cannot afford the initial investment required to integrate the system, train employees, and migrate data. The same anxieties were raised by Sheikh et al. [14] and Ojo and Raman [11], who found that limited resources and financial constraints frequently constrain the use of sustainable HR technologies in emerging economies. The second issue is that of data security and privacy (mean = 4.1). Since the HRIS is an information repository containing large amounts of sensitive employee information, it is necessary to maintain high cybersecurity standards. Breaches not only have financial and reputation risks but also damage employee confidence in digital systems. To avoid these risks, organizations should implement secure cloud infrastructure and data encryption and adhere to data protection laws such as the Information Technology Act of India. Other significant issues include limited technical skills (mean = 3.9), resistance to cultural change (mean = 3.7), and a lack of top management support (mean = 3.8). Such results are reminiscent of Bijoria [4], who has stressed that technological advancements in HRM tend to be met with opposition from staff and leaders who are not digitally literate or fear being pushed

out of employment. Therefore, effective capacity-building and change management programs, coupled with effective commitment by top leadership, are essential to successful implementation.

5.6. Interpreting the Findings in Light of Existing Literature

The research findings confirm those of other recent researchers who have underlined the interlockedness between sustainability and digital transformation. John and Pramila [10] have identified that AI-derived HR analytics can forecast and encourage green behaviour among staff, which complements the current research's findings that technology-focused HR systems contribute to environmental responsibility. In the same vein, Imron et al. [9] claimed that the combination of HRIS and GHRM leads to innovation and the alignment of HR practices and sustainability objectives, findings that also apply to the current research, where integrated HRIS-green software systems achieved the highest adoption rates. Moreover, the paper will assist Chawla et al. [7] in identifying the importance of technology in determining the future of sustainable human capital management. The similarity of results of several studies reinforces the theoretical framework that HR technology adoption is an operational and environmental necessity in the contemporary business environment.

5.7. Limitations of the Study

The limitations of the study are as follows:

- The study's sample of 100 respondents was also restricted to private-sector organisations in India, which may not fully represent all industries and regions, especially the public sector or smaller enterprises with varying resource endowments.
- The study mainly concentrated on four industries, namely IT, manufacturing, banking, and services, which are more technologically advanced. Therefore, the results may be biased in their portrayal of the realities of less digitized areas, such as agriculture, education, or construction.
- The study used a cross-sectional design, with data collected at a single point in time. This curtails knowledge of long-term sustainability practices and of how HRIS and green software adoption are changing or impacting them.
- The data were self-reported, so they could not be very objective and might have been exaggerated to portray positive effects. Future research may require conducting interviews, case studies, or mixed-methods research to provide more valid information.
- HRIS and green software were treated as general categories rather than specified to the different systems, vendors, and implementation models. The difference in the design and functionality of technology might have a more specific impact on the environment.

6. Conclusion

The paper concludes that the use of technology, in the form of HRIS and green software, has a transformative effect on the development of Green Human Resource Management (Green HRM) and on the sustainability of organizations. According to the results, HRIS will enable paperless operations, remote work, and online training, thereby reducing environmental impact and enhancing HR efficiency. In the same manner, green software will ensure system performance, reduce energy use, and improve the organization's environmental image. By combining these instruments, a synergistic model emerges that aligns technological innovation with eco-friendliness. The study identifies reasons organizations can overcome obstacles to implementing e-business systems, including high implementation costs, data privacy concerns, and resistance to change. Yet with strong leadership backing, employee training, and a clear vision of sustainability, organizations can mature. Finally, implementing HRIS and green software is not only an environmental agenda but also enables long-term operational efficiency, employee involvement, and corporate resiliency, making digital sustainability a strategic necessity for contemporary business.

6.1. Future Scope

The limitations mentioned above could be overcome in future research by diversifying the sample to include more public organizations and SMEs. International cross-country analytical research might also examine cultural or policy factors related to the use of sustainable HR technologies. It is recommended that longitudinal studies be conducted to assess the sustainability, cost-efficiency, and long-term effects of digital transformation on employee engagement. Furthermore, scholars can investigate how new technologies, such as Artificial Intelligence (AI), Machine Learning (ML), and cloud computing, can help optimize HRIS and green software. Finally, future research should also consider the human and policy aspects of digital sustainability (e.g., leadership facilitation, employee willingness, and organizational structures that foster eco-friendly HR innovation).

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