

# Eco-Friendly HR for Sustainable Futures: A Comprehensive Bibliometric Exploration of Green Human Resource Management Practices

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## Abstract

*This research paper provides a comprehensive examination of the challenges and opportunities associated with the implementation of Green Human Resource Management (GHRM) practices within organizations. The primary objective is to align human resource strategies with the United Nations' sustainable development goals for 2030. This study integrates descriptive bibliometric analysis, data visualization using VOSviewer software, and thematic analysis.*

*The findings shed light on various challenges, such as employee resistance, knowledge gaps, limited resources, cultural disparities, and resistance from top management. In response, the paper advocates for GHRM initiatives encompassing energy conservation, adoption of a paperless office, water conservation, green buildings, recycling, waste management, and the introduction of green incentives. The paper suggests that future studies could explore sector-specific or region-specific GHRM challenges, evaluate technological and policy impacts, and investigate the interdisciplinary integration of GHRM with broader sustainability frameworks.*

*Keywords: COVID-19, Green Human Resource Management, Environmental Sustainability, HR Challenges, Green initiatives and Bibliometric analysis*

## 1. Introduction

Organizations today recognize the importance of considering social and environmental implications, in addition to financial earnings, to ensure long-term sustainability (Bombiak & Marciniuk-Kluska, 2018; Kainzbauer & Rungruang, 2019). Sustainability, defined as meeting present needs without compromising future generations' ability to meet their own needs, requires organizations to acknowledge their responsibilities towards social and environmental risks and opportunities when making business decisions (Ren, Tang, & E. Jackson, 2018). The "triple bottom line" approach, focusing on People, Planet, and Profit, is adopted to achieve sustainability, with the Human Resource Management (HRM) function playing a crucial role in advancing organizations' sustainability plans by fostering trust, motivation, values, and skills (Santana & Lopez-Cabrales, 2019).

The growing awareness and regulations related to environmental sustainability have led to the emergence of the concept of Green Human Resource Management (GHRM) for effective Environmental Management (EM) within organizations (Ren, Tang, & E. Jackson, 2018). Anlesinya & Susomrith, 2020 support the three-dimensionality of sustainable HRM, which includes GHRM, socially-responsible HRM, and Triple Bottom Line (TBL) HRM (Stahl, Brewster, Collings, & Hajro,

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2020). Aust, Matthews, & Muller-Camen, 2020 suggest a fourth type, Common Good HRM, which can align with any of the three types based on the challenges related to social, ecological, or TBL dimensions (Anlesinya & Susomrith, 2020).

The concept of GHRM is defined as “phenomena relevant to understanding relationships between organizational activities impacting the natural environment and the design, evolution, implementation, and influence of HRM systems” (Ren, Tang, & E. Jackson, 2018). GHRM encompasses various human resource activities, including recruitment, training and development, employee relations, performance appraisal, and pay and reward, all directly linked to an organization’s human resources (Bombiak & Marciniuk-Kluska, 2018). The primary objective of GHRM is to achieve organizational goals or objectives while ensuring environmental sustainability (Ogbeibu, Emelifeonwu, Senadjki, Gaskin, & Kaivo-oja, 2020). Green HR practices and knowledge capital preservation constitute the two primary components of “green HR” (Mandip, 2012). In developing a green workplace, it is crucial for organizations to design and implement eco-friendly policies, recognizing that achieving sustainability goals is challenging without the active involvement of human resources and the implementation of sustainable policies (Ogbeibu, Emelifeonwu, Senadjki, Gaskin, & Kaivo-oja, 2020).

The study aims to achieve the following objectives:

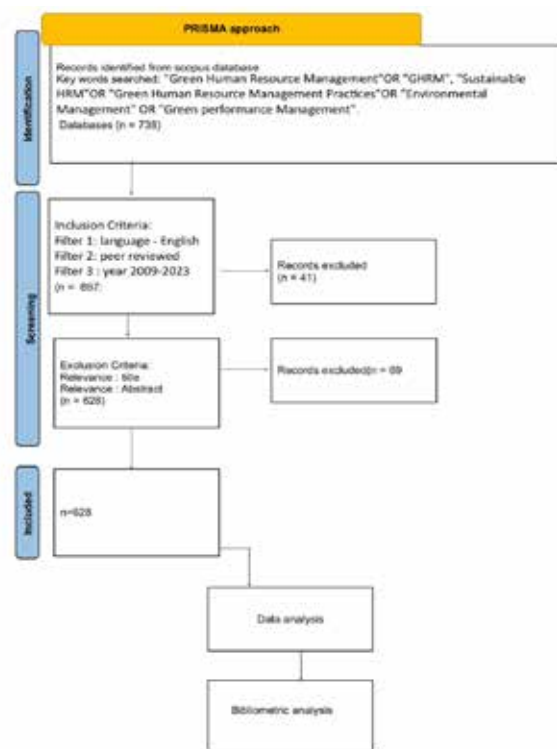
1. To comprehensively examine the concept of GHRM through bibliometric analysis.
2. To investigate the challenges faced by GHRM.
3. To study the initiatives that an organisation can adopt to lead to GHRM.
4. To explore the potential opportunities of implementing GHRM.

### 1.1 Research Methodology

To properly comprehend the substance of studies on GHRM our research is based on a literature review methodology using a descriptive bibliometric method, data analysis visualisation (using VOS viewer software),

and thematic analysis because this technique provide researchers and practitioners with some insightful information (Ikpaahindi, 1985). The steps in the study involves establishing the GHRM keywords, gathering data, and conducting analysis. The bibliometric approach actually blends performance analysis and scientific mapping techniques. Performance analysis uses a variety of techniques, such as word frequency analysis, citation analysis, and counting publications by a unit of analysis, to offer data regarding the volume and impact of research (e.g. authorship, country). Additionally, we employed science mapping, which is based on relational indications and shows how various parts relate to one another spatially (Jin et al., 2019).

**Figure 1: PRISMA APPROACH**



SOURCE: Author's own

### 1.2 Keywords Selection and Data Collection

The use of the Scopus database as the study’s data source was the first stage in the data gathering process because it is the largest database with a variety of publications and analytic tools and was launched by Elsevier in November 2004. (Chadegani et al., 2013). As a result, a

thorough analysis of Scopus was done in March 2023, and information was gathered in March 2023.

Prior bibliometric research and literature reviews on Green Human Resource Management helped us identify and choose the following keywords for our search: “Green Human Resource Management”, “GHRM”, “Sustainable HRM”, “Green Human Resource Management Practices”, “Environmental Management” and “Green performance Management”. Then, in order to provide a complete and current data collection, we filtered the core document and set search produced 738 publications, including articles, book chapters, conference reviews, and conference papers.

### 1.3 Inclusion and Exclusion Criteria

We took into account works that were written in English only excluding other languages. Further by manually eliminating duplicates and modifying data set, 628 published documents remained. Our analysis covered a period from 2009 to 2023.

## 2. Data Analysis

We employed VOSViewer, a programme that supports the building and visualisation of bibliometric networks. Three map views are offered by VOSviewer: a network visualisation, an overlay visualisation, and a density visualisation (Van Eck & Waltman, 2010). These visualisations allow for zooming and scrolling, enabling researchers to fully examine the topic under study. In order to create the network, overlay, and density map, the data set is therefore refined at the software level. Items are represented in the network representation by their label and by default, a circle as well. The label and item’s circle sizes are dependent on the item’s weight. The cluster to which an item belongs determines the hue of the object. We take into account the temporal distribution of bibliometric variables in the overlay visualisation. Next, we examine the two density visualisation subtypes in our study: item density visualisation and cluster density visualisation. Finally, we use the co-occurrence of keywords adopting a full counting approach and the cluster analysis produced

matching authors and index keywords with the list of the most prominent terms of the data set to answer the second research question by examining the primary subjects on our data set. The substance of the papers in each cluster is therefore examined using a theme analysis. The process we use to assign each research paper to a cluster is as follows: we arrange the papers containing keywords into distinct clusters and manually verify that each cluster contains all the articles linked with the relevant keywords.

## 3. Descriptive Bibliometric Analysis

The primary objective of the descriptive analysis is to elucidate the principal features inherent in our dataset, with a specific emphasis on four aspects that are instrumental in capturing scholars’ attention toward GHRM. These aspects encompass:

- (1) the papers most frequently cited and citations distributed across years;
- (2) bibliographic coupling;
- (3) publishing activity categorized by country; and
- (4) the co-occurrence of keywords.

### 3.1 Citations by year and most cited documents

The number of citations provides a sense of the documents’ applicability to a certain subject of study (Baier-Fuentes, Merigó, Amorós, & Gaviria-Marín, 2019).

Table 1 displays the total number of citations per article every year, taking into account the maximum and average total citations. This graph specifically emphasises the most referenced article each year as well as the year in which the papers are on average more cited. This analysis, which is constrained to citations that are present in our data set, enables us to determine the years in which the average accurately reflects the impact of the papers and the years in which it is distorted by the presence of a single paper with a large number of citations but other documents that join it with few citations. This happened in the year 2013 in which most cited papers with a number of citations much higher than average.

**Table 1 No of Citations**

Authors	Title	Year	Cited by
Renwick D.W., Redman T., Maguire S.	Green Human Resource Management: A Review and Research Agenda*	2013	793
Singh S.K., Giudice M.D., Chierici R., Graziano D.	Green Innovation and Environmental Performance: The Role of Green Transformational Leadership and Green Human Resource Management	2020	509
Paillé P., Chen Y., Boiral O., Jin J.	The Impact of Human Resource Management on Environmental Performance: An Employee-Level Study	2014	431
Dumont J., Shen J., Deng X.	Effects of Green HRM Practices on Employee Workplace Green Behavior: The Role of Psychological Green Climate and Employee Green Values	2017	429
Kim Y.J., Kim W.G., Choi H.-M., Phetvaroon K.	The Effect of Green Human Resource Management on Hotel Employees' Ecofriendly Behavior and Environmental Performance	2019	382
Kramar R.	Beyond Strategic Human Resource Management: Is Sustainable Human Resource Management the next approach?	2014	375
Jabbour C.J.C., De Sousa Jabbour A.B.L.	Green Human Resource Management and Green Supply Chain Management: Linking two emerging agendas	2016	373
Tang G., Chen Y., Jiang Y., Paillé P., Jia J.	Green Human Resource Management Practices: Scale Development and Validity	2018	291
Zaid A.A., Jaaron A.A.M., Talib Bon A.	The Impact of Green Human Resource Management and Green Supply Chain Management Practices on Sustainable Performance: An Empirical Study	2018	282

In Table 1, about the top 10 cited papers, the first paper (Renwick, Redman, & Maguire, 2013), although first published, has 793 citations. According to this research, there is a knowledge gap about how GHRM practices influence employee motivation to participate in environmental activities, contrasted to an understanding of how organisations promote green talents and provide possibilities for involvement in EM efforts. Organisations appear to be underutilizing the full range of GHRM practices, thereby impeding their ability to improve their environmental management efforts.

The second paper (with 509 citations) is Singh, Giudice, Chierici, & Graziano, 2020, their study revealed that GHRM has an indirect influence on a firm's environmental performance through its impact on green

innovation. Moreover, they also advance the current understanding by demonstrating that the relationship between HRM and performance is not solely dependent on the additive effects of green transformational leadership and green innovation as antecedent and mediator, respectively, or their interactive effects, but rather a combination of both forms. This highlighted the critical role of leadership in shaping HRM practices, which subsequently impact green innovation and ultimately predict the environmental performance of the organisation. The other most cited papers, in Table 1, have fewer citations (from 282 to 431).

### 3.2 Bibliographic Coupling

In this study, we utilized bibliographic coupling, a technique that identifies and analyzes the relationships

between publications based on the references they share. The application of this method revealed the presence of four distinct clusters denoted by different colors: yellow, blue, green, and red (refer to Figure 2 ). These clusters represent groups of publications that exhibit strong connections through the references they cite, indicating distinct streams of literature (Bellucci, Marzi, Orlando, & Ciampi, 2021).

It is noteworthy that all papers within each cluster presented links to one another, demonstrating a cohesive relationship within the respective research domains. Additionally, it is important to acknowledge that while all papers displayed connections, some of these links were weaker and hence not as visibly represented in the visual depiction (Figure 2). These weaker connections hint at subtler associations between certain publications, suggesting nuanced interrelations within the academic discourse. Further exploration and analysis are needed to better understand the depth and significance of these weaker links in the scholarly network.

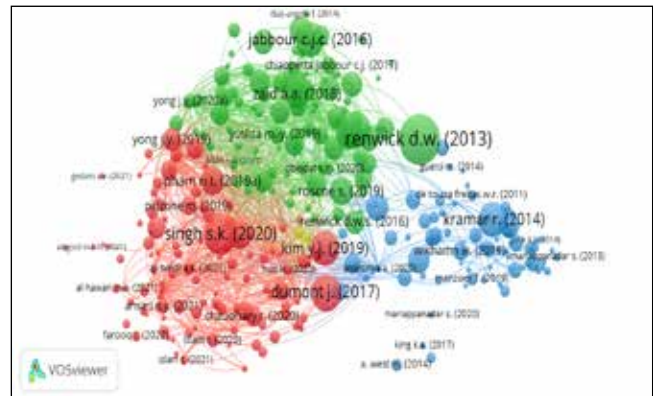
To conduct this analysis, top seven cited articles in each cluster formed from the bibliographic coupling of references, establishing connections between their prevalent themes to define distinct literature streams. This approach allowed us to gain a deeper understanding of the thematic underpinnings and research focus characterizing each cluster.

#### Red Cluster: Green Human Resource Management (GHRM) for Sustainability

The bibliometric theme within the red cluster revolves around the concept of GHRM and its pivotal role in fostering sustainability within organizations. The seven articles collectively emphasize diverse dimensions of GHRM and its impact on organizational components, with the overarching goal of promoting environmentally responsible behaviors and sustainable practices. The identified themes within this cluster include the systematization of GHRM knowledge, mediation of organizational citizenship behavior, linking G-HRM to green organizational citizenship behavior, and fostering green creativity through GHRM. The findings reveal a

multifaceted role of GHRM, contributing to sustainable development and creating a positive environmental impact.

**Figure 2: Network Visualisation Map**



*Source: Author's own*

#### Green Cluster: Trends and Gaps in Green Human Resource Management Research

The bibliometric theme in the green cluster explores the academic landscape of GHRM through a comprehensive literature review. Each paragraph within this cluster addresses distinct aspects of GHRM research, covering the identification of progressions and research gaps, implementation in specific contexts like Palestinian healthcare organizations, and a broader examination of GHRM literature. The themes include clusters such as GHRM practices, employee green behavior, and organizational sustainability. The systematic review, mixed research approach, and comprehensive literature review collectively contribute to understanding the current state, trends, and future research directions in the field of GHRM.

#### Blue Cluster: CSR, HRM, and Sustainability Practices

The common bibliometric theme across the blue cluster involves the systematic review and analysis of the relationship between CSR, HRM, and sustainability practices. Each paragraph within this cluster explores different facets of this overarching theme, offering insights into the current state of research, key topics, and areas for future exploration at the intersection of

CSR, HRM, and sustainability practices. The themes include a systematic review of the CSR and HRM link, emerging questions in GHRM, and a systematic review of sustainable HRM, research. Collectively, Figure 2: Network Visualisation Map Source: Author's own these reviews contribute to understanding the interconnected fields and provide directions for future research.

Yellow Cluster: Environmental Strategies, HRM, and Sustainable Development

The bibliometric theme within the yellow cluster revolves around the exploration of the intersection between corporate environmental strategies, HRM practices, and sustainable development within organizations. The paragraphs within this cluster contribute to understanding the relationship between corporate environmental strategies and HRM, emphasizing the importance of coherence and consistency in promoting environmental performance and sustainable development. The themes include intraorganizational green careers and HR development, which extends the concept of HR development to include environmental considerations, and bibliometric characterization of sustainable HRM literature, providing insights into the most and least discussed aspects of sustainable HRM and directions for future research.

### 3.3 Co-authorship at Country Level

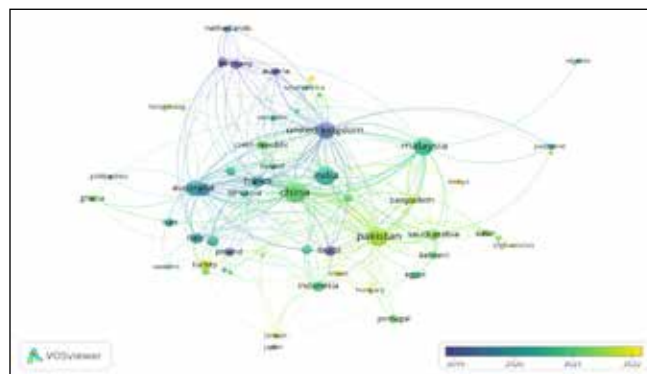
The bibliometric co-authorship indicator at the country level plays a crucial role in improving productivity outcomes, as it signifies both geographic collaboration and distribution (Perianes- Rodriguez, Waltman, & van Eck, 2016). Utilizing the VOSViewer software, our analysis identifies China as the most active country in advancing publications on GHRM, with Pakistan, India, and Malaysia closely following suit (see Figure 3).

### 3.4 Keywords Co-occurrence

The author's specified keywords are used in co-occurrence of keywords analysis to look into the relationships between the major subjects in the subject area under consideration (Jia, Liu, Chin, & Hu, 2018).

The co-occurrence of keywords in GHRM can provide insights into the important concepts, topics, and themes that are associated with this field of study. By analyzing the frequency and relationships of these keywords, one can identify patterns and trends in the literature, as well as the most relevant and impactful topics that have emerged over time.

**Figure 3 Country Co authorship overlay visualisation**



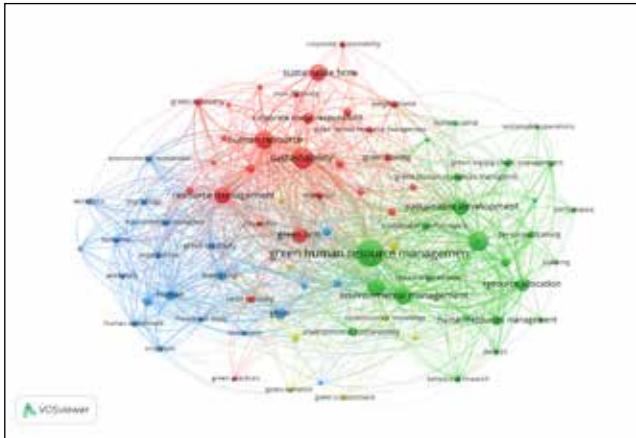
Source : Authors own

The data in Figure 4 reveals relevant to GHRM study. It establishes the network's keyword cooccurrences. Additionally, we only take into account words that appear at least 9 times in the list. The singular and plural forms ("Green Human Resource Management", "GHRM", "Sustainable HRM", "Green Human Resource Management Practices", "Environmental Management" and "Green performance Management") were properly processed.

Some of the most common keywords that co-occur with GHRM include: Sustainability, Environment, Corporate social responsibility, Energy efficiency, Renewable energy, Waste reduction, Green initiatives, Green practices, Carbon footprint, Eco-friendly, Green incentives, Water conservation, Recycling, Green jobs, Green workplace. These keywords all relate to different aspects of GHRM and are commonly used in discussions and strategies related to environmental sustainability in the workplace.



**Figure 4: Keyword Co occurrence  
Network Visualisation**



Source: Author's own

#### 4. Challenges of GHRM

**Employee Resistance to Change:** One significant hurdle is the resistance encountered from employees when introducing GHRM practices. Deshwal (2015) highlights that employees may exhibit reluctance in embracing new ideas, perceiving changes as additional responsibilities or disruptions to established routines. Overcoming such resistance proves challenging, as altering employee behavior requires time and not every employee is equally motivated to participate in the promotion of GHRM practices (Deshwal, 2015).

**Lack of Knowledge:** Another impediment lies in the lack of awareness among employees regarding the environmental impact of their work practices. Ullah (2017) emphasizes that the success of GHRM hinges on fostering understanding and awareness about environmental issues and the benefits of adopting green practices as shown by Figure 4: Keyword Co occurrence Network Visualisation Source: Author's own. Without proper knowledge dissemination, the implementation of sustainable HR practices may be hindered.

**Limited Resources:** The financial constraints associated with implementing GHRM practices pose a significant challenge. Deshwal (2015) notes that cultivating a culture of GHRM throughout an organization is a time-

consuming process, and the associated expenses can be prohibitive. Organizations may lack the necessary resources to make essential adjustments for the successful incorporation of sustainable HR practices (Olateju, Aminu, & Danmola, 2020).

**Lack of Expertise:** The absence of internal expertise is identified as an obstacle in effective implementation of GHRM practices. Deshwal (2015) highlights the dilemma faced by HR professionals who may lack the knowledge required to establish green structures, green processes, green tools, and green thinking within the organisation. This knowledge gap can impede the selection and development of future leaders.

**Organisational Difficulties:** Adhering to environmental norms and regulations present a significant challenge for Organisations adopting GHRM. Additionally, Deshwal(2015) underscores the difficulty in measuring the effectiveness of green HR practices in influencing employees behaviour, adding a layer of complexity to the implementation process.

**Resistance from Top Management:** The commitment of top management to the concept of GHRM is crucial for successful implementation. Olateju, Aminu, & Danmola(2020) emphasis on partial commitment from from top management can impede the execution of green initiatives, creating a barrier to the comprehensive integration of sustainable HR practices within organisation.

#### 5. Initiatives for GHRM

**Energy Conservation:** Office energy conservation is crucial for environmental impact. Workplaces globally are implementing programs to save energy. This includes policies like turning off lights and electronics during non-use hours, promoting natural light and air, and using energy-efficient equipment. Companies are also exploring renewable energy sources like solar panels to reduce dependence on non-renewable energy. Conducting energy audits helps identify areas for reducing energy consumption and costs, contributing to

effective and eco-friendly services. The Paperless Office: the shift to a paperless office, enabled by information technology, has transformed traditional office practices. Now a days, key documents are digitized, reducing or eliminating the need for paper. This transition not only cuts down on paper consumption but also lowers costs related to printing, copying, and storing physical documents. It also saves time in document retrieval. The move towards a paperless office contributes to resource conservation, pollution prevention, and the preservation of water and energy.

**Water conservation:** To promote water conservation in manufacturing, GHRM practices encourage employees to adopt eco-friendly habits, like shorter showers and reusable water bottles. Implementing low-flow restroom equipment and water-saving landscaping, such as native plants and drip irrigation, further reduces environmental impact. This approach not only supports sustainable development but also engages staff in eco-friendly behaviors, fostering a culture of water conservation in the workplace.

**Green building:** Organizations globally increasingly favor eco-friendly buildings, like the Bullitt Center in Seattle, to minimize environmental impact. Green structures adhere to construction standards that reduce natural resource exploitation. They promote sustainable practices such as energy efficiency, renewable energy use, and effective stormwater management. The Bullitt Center exemplifies these principles by utilizing rooftop solar panels, rainwater harvesting, and composting toilets for energy, water, and waste efficiency. Constructed with sustainable materials, the building maximizes natural light and ventilation, reducing the need for artificial lighting and air conditioning. Its location encourages eco-friendly commuting, contributing to a new benchmark for sustainable construction globally.

**Recycling and Waste Management:** It involves transforming waste into new products. This includes

educating employees on eco-friendly practices, such as segregating recyclable and non-recyclable materials. To further promote recycling, companies can install recycling stations, implement recycling programs, and encourage reusable containers and utensils. HR professionals play a role in informing employees about waste reduction benefits and fostering participation in green initiatives. Overall, integrating recycling and waste management into GHRM practices not only reduces environmental impact but also promotes sustainable development and engages employees in ecofriendly behaviors.

**Green Incentives:** Compensation and rewards are essential processes used to recognise employee performance in organisation. In the context of GHRM, these processes can also be utilized as tools to encourage environmental sustainability within organisations. Green incentives can be given to departments and individuals who have demonstrated innovative initiatives and contributed to the organisations environmental goals by reducing waste, utilising green resources, and saving energy. By recognising and rewarding employees who contribute to environmental sustainability, organisations can promote a culture of eco-friendliness and encourage employees to take actions that benefit the environment. For example, Google offers its employees a free shuttle service that runs on biodiesel, reducing the number of cars on the road and promoting eco-friendly commuting;

## **6. Opportunities in implementing GHRM Policies**

Organizations may benefit from implementing GHRM practices in a number of ways, including:

**Improving corporate image:** GHRM policies can be implemented to improve an organisation's corporate image by showcasing the organisation's dedication to environmental sustainability. This can draw in clients, investors, and future workers who place a high value on sustainability.



**Engagement of employees:** GHRM practices that encourage employee involvement in environmental efforts, offer green training programs, and recognise staff members' environmental accomplishments can all assist to boost employee engagement and motivation.

**Regulatory compliance:** Adopting GHRM practices can assist organisations in adhering to environmental laws and standards, avoiding fines and other consequences, and safeguarding their brand.

**Cost Saving:** Savings on energy bills, trash disposal expenses, and the purchase of raw materials are possible for organisations that adopt green practices including consuming less energy, generating less waste, and using sustainable procurement methods.

**Talent Attraction & Retention:** GHRM practices can attract environmentally conscious talent. Employees are increasingly seeking employers who share their values, including a commitment to sustainability. This can help in recruiting and retaining best talent which can contribute to a positive workplace culture.

**Stimulate Innovation:** A focus on sustainability can drive innovation within the organization. GHRM encourages the development of new, environmentally friendly processes & technologies, leading to increased efficiency and productivity.

**Supply Chain Responsibility:** Organizations often have extended supply chains that contribute to their environmental footprint. GHRM can extend its influence to supply chain management, encouraging suppliers to adopt sustainable practices and creating a more responsible and resilient supply chain.

**Corporate Social Responsibility (CSR):** GHRM aligns with broader CSR goals, contributing to a positive corporate image. It can be an integral part of an organization's commitment to social responsibility and ethical business practices.

**Employee Health and Well-being:** Some GHRM practices, such as providing green spaces, promoting sustainable transportation options, and reducing

exposure to harmful substances, can positively impact employee health and well-being.

## **7. Conclusion:**

In conclusion, the study delves into the critical realm of Green Human Resource Management (GHRM) and its multifaceted dimensions in promoting sustainability within organizations through descriptive bibliometric analysis. It sheds light on the evolving landscape of GHRM research, emphasizing the most cited papers, bibliographic coupling, co-authorship at the country level, and keywords co-occurrence. Notable findings include the identification of key research clusters, the prominent role of China in advancing GHRM publications, and the exploration of major keywords associated with GHRM .

The study supports that employee resistance, lack of knowledge, limited resources, and other organizational difficulties pose significant hurdles that can be overcome through a strategic and collaborative approach involving effective communication, education, and commitment from top management. It also proposes initiatives that organizations can adopt to embrace GHRM successfully like energy conservation, a paperless office, water conservation, green building practices, and recycling. The study repositions GHRM as a catalyst for innovation, supply chain management, corporate social responsibility, and employee health and well-being.

Furthermore, the study recognizes the vast array of opportunities associated with implementing GHRM policies namely improving corporate image, increased regulatory compliance, cost savings, talent attraction, and retention.

In essence, GHRM emerges not only as a response to environmental imperatives but also as a strategic imperative for organizational success in the evolving global landscape. The study provides valuable insights for researchers, practitioners, and policymakers seeking to understand and contribute to the evolving field of Green Human Resource Management.

## 8. Limitations

Despite its contributions, this study has some limitations that should be acknowledged. First, the research is based on a bibliometric analysis of literature listed on Scopus database only, though there are many other databases like web of science, dimensions, etc.

Second, the study focuses on English-language publications, potentially excluding valuable contributions in other languages.

Third, the study is based on publications from 2009 to 2023. As the field of GHRM is dynamic, with ongoing developments and emerging trends, future research should consider updating the analysis to capture the latest advancements and shifts in research focus.

Fourth, while the study identifies challenges, initiatives, and opportunities, the effectiveness of these strategies in diverse organizational contexts may vary. Practical implementation and success may depend on organizational size, industry, and cultural factors.

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