MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

Understanding how Artificial Intelligence is redefining the traditional Green HRM Practices for a Sustainable Economy.

Manish Naresh Bharthi- Corresponding Author
Research Scholar
DIT University | Dehradun-248001 | Uttarakhand| India
1000018874@dit.edu.in
0000-0003-2405-1825
Dr. Prakash Tiwari
Professor
DIT University | Dehradun-248001 | Uttarakhand| India
drprakash.tiwari@dituniversity.edu.in
0000-0002-1915-6756
Dr. Pankaj Kumar
Assistant Professor
DIT University | Dehradun-248001 | Uttarakhand| India
pankaj.kumar@dituniversity.edu.in
Dr. Rakesh K. Pandey
Assistant Professor
DIT University | Dehradun-248001 | Uttarakhand| India
rakesh.pandey@dituniversity.edu.in
0000-0002-5845-094x

Abstract
The purpose of this study is to map the interaction between Green Human Resource Management, employee engagement, and Artificial Intelligence over the period from 2000 to 2025. The research aims to identify thematic shifts and evaluate the impact of digital transformation on sustainable workforce management. This literature review followed PRISMA guidelines and used the Scopus database for data collection. The study employed a bibliometric approach, using VOSviewer and R-Studio to analyse annual research volume, geographical contributions, and thematic trends.The analysis reveals a sharp increase in research activity, rising from 4 articles in 2018 to a maximum of 58 in 2024, with India contributing 25 documents. Thematic trends indicate a shift from general "basket case" sustainable development in 2021 to specialised AI-enabled green practices, such as digital recruitment and selection, by 2023. Notably, AI integration into GHRM frameworks can improve employee engagement and retention by up to 20% while enhancing environmental outcomes through data-driven measures. However, the field remains fragmented; Lotka's Law shows that 93.5% of authors have produced only a single document. AI-driven GHRM demonstrates significant potential for sustainable workforce management. Organisations can leverage digital technologies to establish powerful information systems for tracking sustainability data, thereby improving governance mechanisms and employee retention.
This study provides a unique bibliometric mapping of the niche intersection between AI and GHRM. It quantifies the specific benefits of AI for employee engagement and identifies the transition toward specialised digital recruitment as a core component of modern sustainability frameworks.
Keywords: Green Human Resource Management, Artificial Intelligence, Employee Engagement, Sustainable Development, Systematic Literature Review

1. Introduction

The present research, therefore, identifies the importance of deploying the HRM policies with the environmental aims to enable sustainability and the achievement of eco-friendly goals (Daily and Huang, 2001; Wright et al., 2001; Renwick et al., 2008). The concept of Green HRM and sustainable HRM has attracted massive attention in recent years due to the fact that it focuses on the environmental and socio-economic dimensions of corporate practices (Mishra et al., 2014). Existing literature emphasises the need to integrate sustainable HR practices in addressing ecological concerns of organisations while sustaining their performance (Walter, 1996; Wright et al., 2001).GHRM initiatives such as green recruitment, green training, employee involvement mechanisms and green performance management have been recognised as evidence for the pro-environmental employee behaviour and organisational ecological performance (Gupta, 2018). These initiatives foster an environmentally conscious corporate culture and involve employees in sustainable practices, in spite of the persistent problems of initiation, implementation and acceptance (Frank et al., 2004). Numerous studies show that employees usually support organisational greenness-related practices because they indicate the organisation is committed to the environment and lead to increased engagement, motivation and commitment to the environment (Leidner et al., 2019; Marrucci et al., 2023). Sustainable HRM is the further application of this thinking, but it focuses on the long-term well-being of the employees and society in general. There is evidence that it facilitates a sense of commitment by employees toward environmental and societal objectives, psychological safety and trust, which result in enhanced support for such efforts by employees (May et al., 2004). As such, employee engagement has become a key outcome in the sustainable HR literature (May et al., 2004). Engagement is defined as the psychological state that represents the dedication of employees to make their own contribution to organisational objectives that can be characterised as a positive, fulfilling work-related state marked by vigour, dedication, and absorption or the level of discretionary effort that employees exert (Agustini et al., 2025; Baumruk, 2004; May et al., 2004; Richman, 2006; Shaw, 2005). According to the literature, both GHRM and sustainable HRM encourage employees to participate through encouraging meaningful investment in work, ethical behaviour, and collective responsibility (Shoaib et al., 2021; Muisyo et al., 2022).

2. Conceptual Scope

Before the analysis of the voluminous literature, we outline the conceptual frame of this review by defining the conceptual frameworks of the key concepts. The process of establishing the role of the employees in the realisation of organisational environmental management objectives is not new and can be traced back to the 1990s (Bunge et al., 1996. Preliminary research was based on an environmental management approach, with the focus on the influence of employees on EM. As an example, the edited book by Walter (1996) was one of the first attempts to reconcile HRM and EM. Later on, the first review of greening HR practices was presented by Renwick et al. (2008), which discusses GHRM that later generates sustainable HRM.
The practices that encourage green initiatives through increasing awareness and commitment of employees towards the environment have been defined as GHRM (Mishra et al., 2014). This discipline is extremely important given that it facilitates the other organisational activities, which include green money, supply chain, marketing and operations (Wright et al., 2001). GHRM represents an ecologically-oriented and profit-driven strategy, which includes eco-friendly HR programs that promote efficiency, minimise expenses, and increase the involvement of the employees (Lozano, 2008). It entails a perpetual cycle of finding new methods of approaching people in order to impress them more about the environment (Shoaib et al., 2021). Though green-oriented initiatives tend to be accompanied by challenges and issues in setting, within the realm of implementation, and employee adoption (Jenkins, 2002), GHRM assists in supporting such changes by established practices, such as green recruitment, training, and performance management (Lozano & Barreiro-Gen, 2022). In this way, GHRM may be regarded as a creative process that is moving towards a higher green future. In addition, the AMO framework presents a theoretical perspective to this change, according to which the ability required is extended by green recruitment, and the employee motivation and chances of participation in environmental ways are augmented by the targeted incentives and performance management systems.
After considering the theoretical background of GHRM, we now find ourselves moving on to the field of employee engagement literature to conceptually set a clear cut. Employee engagement is an emotional-intellectual dedication to the organisation (Priyanti et al., 2025), or the extent of discretionary effort which employees put in their jobs (Tukiran & Desianti, 2025). There are various definitions that are provided in academic literature; one of the definitions is a positive and satisfying work-related status which is energetic, committed and engrossing (Baumruk, 2004; Richman, 2006; Shaw, 2005). It is claimed in these sources that engagement is not a temporary or object-oriented state, but it is a more lasting and widespread state of affective-cognitive without a specific focus on either a particular object, event, person, or behaviour (Gupta, 2018; Goswami & D'silva, 2025). These theoretical delineations outline how the intersection of GHRM and employee engagement has now become a research topic that sparks debate and curiosity due to the topicality of GHRM in the global economy and the rising interest of practitioners in sustainability.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

To clarify the review, I have divided it into two major parts. The former reviews the literature concerning GHRM or sustainable HRM and its connection to employee engagement, explaining how the sustainable people-management activities drive worker engagement and commitment (Muisyo et al., 2022). The latter is about artificial intelligence, which is studied in terms of its interaction with these constructs to learn how technology is being integrated in human and organisational variables. The width of AI is demonstrated by various definitions by scholars. According to Russell and Norvig, it concerns the analysis of intelligent agents which perceive their world and take actions to maximise the results, which highlights the ability to make decisions. The article (Kaplan and Haenlein, 2018) describes AI as a system that has the ability to process the information, to study it, modify behaviour to achieve goals and mentions the flexibility. Similarly, Davenport et al. (2019) make AI an interdisciplinary project that allows machines to execute the human-intelligence-demand activities. Taken together, these opinions put AI as the innovative power capable of transforming the world of HRM practices and employee engagement (Davenport et al., 2019; Jarrahi, 2018; Kaplan and Haenlein, 2018).Due to the newness of the interactions between these three notions, GHRM, employee engagement, and AI, the area is dynamic with significant development opportunities as the number of publications and new themes, such as ethical AI structures, have been skyrocketing lately (Alherimi et al., 2025).

3. Research Methodology

The relevant literature was identified using a 3-phase development of keywords: a pilot search on Google Scholar, reviewing the available scholarly websites and consulting the experts to narrow down the search criteria. This provided a thorough search string of sustainability and human resources, as shown below: Green AND Human AND Resource AND Management OR Sustainable AND Human AND Resource AND Management AND Employee AND Engagement. In order to include the technological aspect, we expanded the search term in the following way: Green AND Human AND Resource AND Management OR Sustainable AND Human AND Resource AND Management AND Employee AND Engagement AND Artificial AND Intelligence.

Based on PRISMA, we used the Scopus database as it provides access to high-quality bibliometric information and peer-reviewed materials. The inclusion and exclusion criteria were such that only the latest peer-reviewed journal articles published between 2000 and the year of study in the English language were empowered to capture the most important growth of the field. We have not included books, book chapters, and conference proceedings, which will meet academic rigour. Further, titles and abstracts were manually screened to eliminate the records of irrelevant keywords or those not in the scope of the research areas of social sciences and human resource management. This filtering procedure made the final choice of 53 appropriate articles, which will form the main corpus of content and bibliometric analysis. Then, bibliometric software was applied to process and synthesise data to map the developments of patterns, themes and intellectual organisation of this developing domain in research. This level of methodological rigour will make sure that the systematic literature review is able to be used to give a credible foundation as a basis to determine key trends and provide gaps between existing research. This analysis enables defining the most important thematic groups, including but not limited to the integration of big data into the development of ethical AI frameworks of organisational preparedness by using such tools as VOSviewer and RStudio. The resultant outputs of these analytical processes can be used to explain the effect of technological use on workforce dynamics and, at the same time, demonstrate the need to have governance of automated decision-making. This synthesis can explain the complex overlap between subsequent digital transformation and sustainable workplace practices, which provides a framework for future empirical studies regarding the socio-technical potential of AI-driven GHRM.

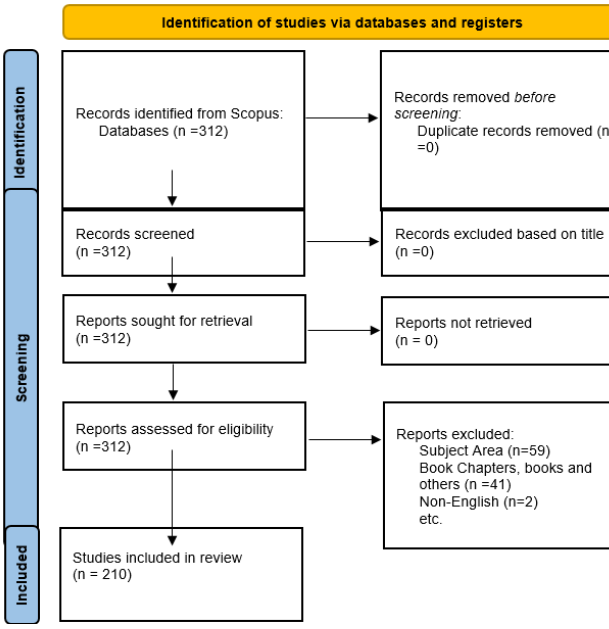

Figure 1: Prisma Flow Chart of Research on Green HRM and Employee Engagement

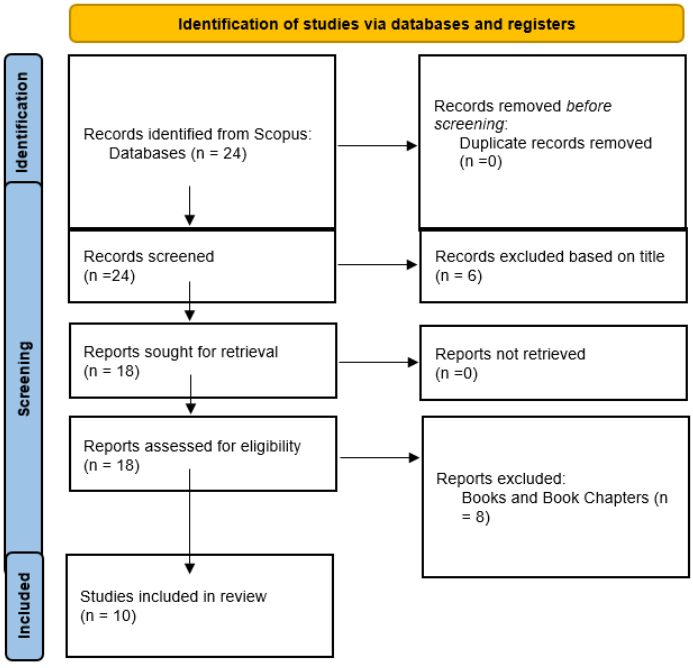

Figure 2: Prisma Flow Chart of Research on AI and Green HRM

4. Results and Discussion

The bibliometric review of the academic production of the last decade (between 2000 and the study period) indicates that the research on the topic of green and sustainable human resource management has evolved considerably. Though the output of scientific annual productions was relatively seasonal between 2017 and the beginning of 2023, in 2018, with 4 publications, it reached its low point and then rose in 2019 to 20 and hit a high in 2024 with 58. This trend is upwards, which makes it appear that there is growing world interest in integrating environmental sustainability in HR practices and their impacts on employee engagement. In the geographic context, the research is overly concentrated in South and East Asia, and India comes first, then China, Indonesia, Thailand and Iran. These areas, where digitalisation is fast advancing, and environmental concerns such as urban pollution and climate insecurity are becoming urgent, are also becoming more focused on GHRM and the integration of AI-powered workforce solutions. The literature has become mature now, no longer based on foundational themes such as sustainable development and employee engagement, but on more specialised themes (such as green work engagement, green creativity, and green recruitment and selection). This development is indicative of increased technological penetration, with AI finding its place in HR operations such as preferment and performance management. Major journals would be Sustainability, Corporate Social Responsibility and Environmental Management, and interdisciplinary journals such as IEEE Transactions on Engineering Management and Evidence-Based HRM. The most important observation made during this analysis is that employee participation is a mediating factor in promoting AI and sustainability programs. The use of AI promotes interaction through personalised learning and real-time feedback through ethical and responsible implementation. There comes empirical data indicating that AI-green HR synergies have the potential to increase engagement and retention by up to 20% and reduce environmental footprints in organisations through AI-led sustainability practices. Such integration, in a true sense, inculcates meaning and organisational citizenship behaviour, which aligns the workforce commitment towards greater societal and ecological objectives.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

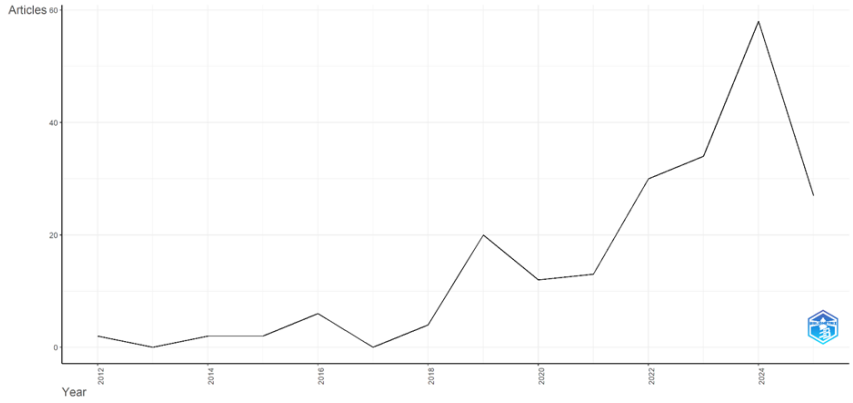

Figure 3: Annual Scientific Production of Research on Green HRM and Employee Engagement

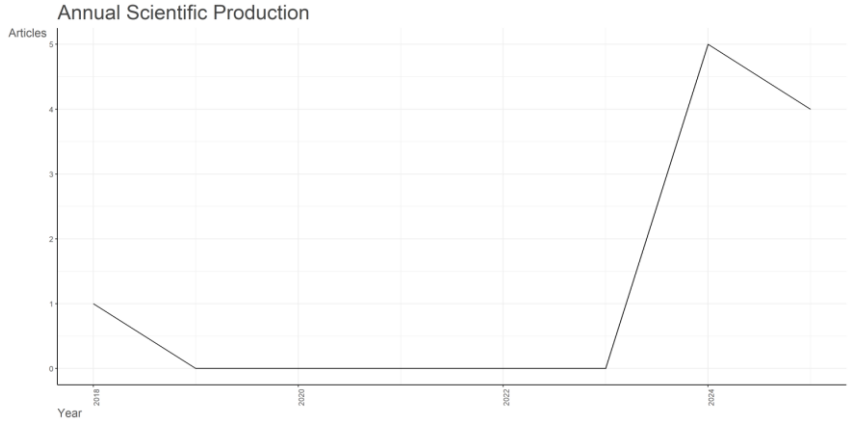

Figure 4: Annual Scientific Production of Research on Artificial Intelligence and Sustainable Human Resource Management

4.1. Country-Wise Scientific Production

The country-level scientific production maps indicate the difference in research done in green and sustainable human resource management within regions. Fig 5 will show the distribution of scientific contributions with regard to Green HRM and Sustainable HRM globally. The map shows that a significant part of the publications output is concentrated in countries like India, China and the United States that are depicted by the darkest colours. These countries may have turned out to be the major addressee to the scholarly discussion on sustainable organisational practices owing to the mass workforce, high pace of industrialisation, and the emerging sustainability policies. The European nations, the United Kingdom, Germany, France, and Italy, are also highly engaged in carrying out scientific activities, and this is in addition to Australia, Brazil, South Africa, and Japan. The increased global reach of the influence can be seen by the light-blue shade of the countries where the emphasis on the idea of implementing sustainability into HRM is rising, yet certain areas still remain underrepresented, especially parts of Africa and the Middle East. This geographic pattern points out the role that regional context plays in creating Green and Sustainable HRM practices. Future studies can focus on having more comparative cross-country research, studies concerning the aspects of cultural dimension in the quest to achieve sustainable HRM, and studies concerning the manner in which nations in the Global South are able to come up with context-specific models that resonate with the ambitions of the environment and society. Figure 6 displays the worldwide distribution of scientific output in the areas of Green HRM, Sustainable HRM, AI in the workplace and in engagement with employees, which shows the evident concentration in South and East Asia. India tops the list, being the most prominent shade, although nations such as China, Indonesia, Thailand, and Iran can be seen in other shades, meaning that they do not produce as much but still produce. Such a local perspective can provide a good understanding of the popularity of such countries as India and China, which are also going through rapid digital and industrial shifts and thus are making their focus on the enhancement of sustainability in HR activities and the use of AI in workforce management. The presence in India could be associated with its booming startup scene, the digital public infrastructure, and new approaches of GHRM in state-owned businesses. Furthermore, other environmental challenges faced by these nations, including urban pollution, climate vulnerability, and population pressures, are also remaining dramatic, which probably drives the emergence of Green HRM as an educational and political issue. Energy-efficient workspaces, sustainable talent procurement, and eco-friendly training regimens are some practices of GHRM, which are increasingly relevant in the Asian economies in ensuring growth and sustainability. To be more precise, as many as there have been increasing regional interests, as can be seen on the map, there also is a significant lack of contributions as far as much of Africa, South America, and some of Europe and North America are concerned. It opens the possibility of cross-regional research partnership and exchange of knowledge, especially in the adaptation of sustainable HR practices and AI technologies to the variation in the socio-economic settings.

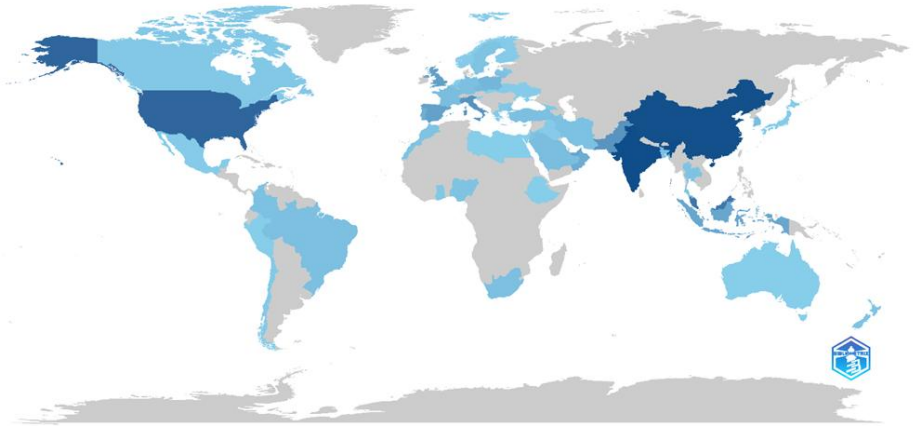

Figure 5: Country-Wise Scientific Production of Research on Green HRM and Employee Engagement

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

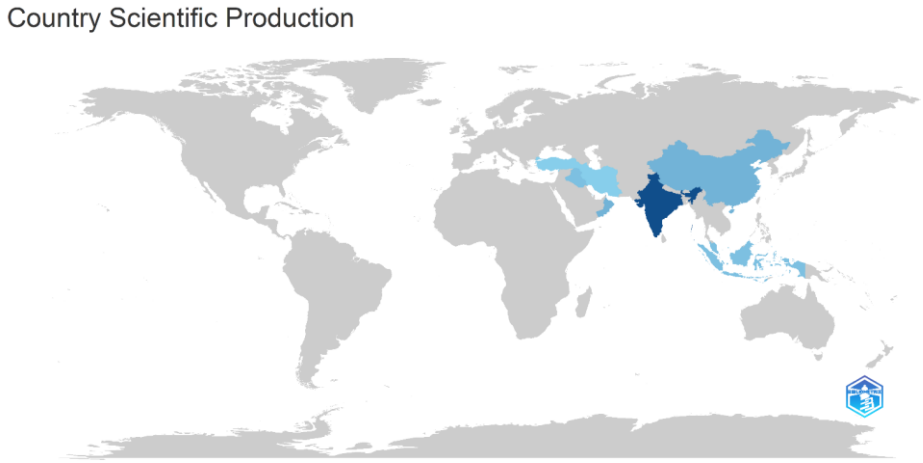

Figure 6: Country-wise scientific production of Research on Artificial Intelligence and Sustainable Human Resource Management

4.2. Most Relevant Sources

Figures 7 and 8 provide the representation of the sources that contribute to the academic discussion on Green HRM, Sustainable HRM, employee engagement, and AI in the workplace. Figure 7 illustrates the most significant journals on the topic of Green HRM and employee engagement, with Sustainability becoming the most important source (four documents), the Business Strategy and the Environment and Corporate Social Responsibility and Environmental Management coming second (two publications each). The fourth one is the Journal of Cleaner Production, accompanied by the mid-tier sources, including E3S Web of Conferences and Lecture Notes in Networks and Systems (five documents each), and other sources, including Cogent Business and Management, Employee Relations, Heliyon, and Human Systems Management (three documents each). Figure 8 shows that the literature base on AI and Sustainable HRM is fragmented but diverse, with each of the listed sources providing a single document, including those engineering- and management-related, namely IEEE Transactions on Engineering Management, Discover Sustainability and Evidence-Based HRM. The existence of conference proceedings suggests that a lot of this has been exploratory. This broad distribution is an emphasis on the interdisciplinary nature of the discipline. Scholars in the future can develop on this basis by enhancing cross-disciplinary cooperation, in particular, between environmental science, innovation research and management research. Potential dwellings in underrepresented areas may also be possible, including the application of emerging technologies in meeting sustainability objectives or the evaluation of sustainability effects in developing economies. Additionally, the aim of future scholarship should be to move beyond geographical differences to bring about comparative research focusing on the efficacy of these models under various regulatory and cultural settings.

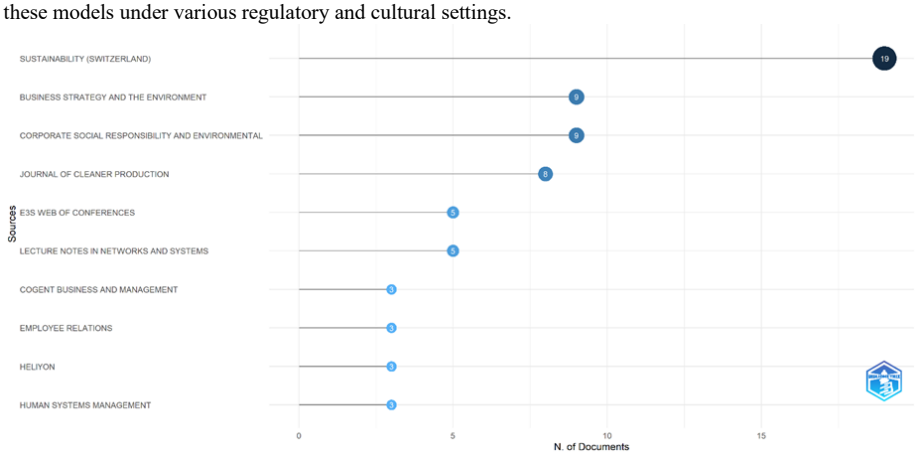

Figure 7: Most Relevant Sources of Research on Green HRM and Employee Engagement

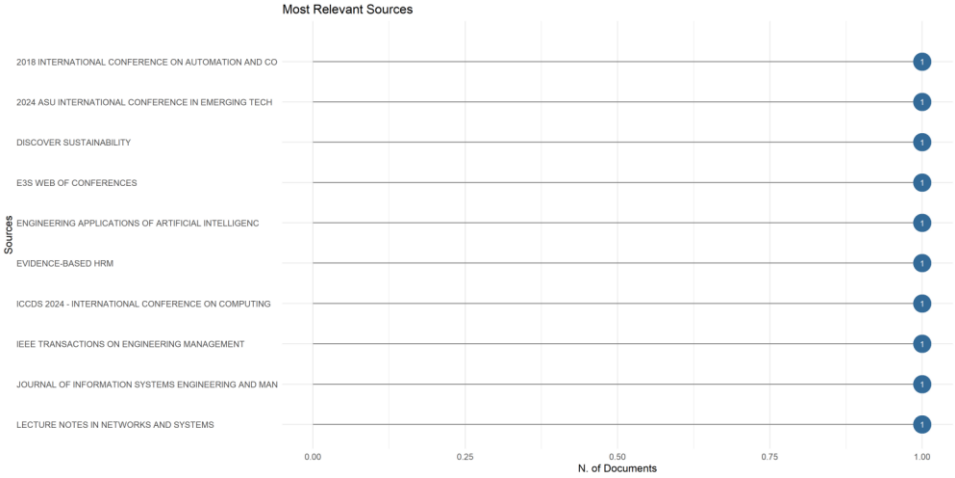

Figure 8: Most Relevant Sources of Research on Artificial Intelligence and Sustainable Human Resource Management

4.3. Most Relevant Authors

Figures 9 and 10 show the frequencies with which the most relevant authors have been included in the academic discourse. Figure 9 presents the authors of the research paper on sustainability and employee commitment, of which Gupta S, Li M, and Li W have the most publications, with three documents each. They

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

examine the effect of GHRM practices on the levels of employee engagement, organisational sustainability and green behaviours, which is mostly supported by psychological processes like green climate, and individual values. The mediation of the effect of psychological ownership on leadership roles, attitudes of employees, has been studied by other prominent authors such as Aboramadan M, Ahmad A and Bhatti MA in the setting of GHRM. These contributions underscore the increased scholarly interest in the matching of human resource practices towards environmental objectives. Conversely, Figure 10 shows researchers on AI innovation and Green HR practices published only one document in both data sets, indicating both a disjointed but broad literature base that can be compared to the nascent phase of integration of AI and HR practices. This regularity implies that the area of AI-infused Green and Sustainable HRM is still at its core phase of development, as it is defined by the general individual contributions of numerous fields of interdisciplinary experiences found in management, engineering, sustainability, and computer science and not in a research cluster or a figure opinionated author. This scattering, within a subsequent publication rush that is still underway, is indicative of a weak sense of specialisation or even enduring interest of individual researchers in the current point, highlighting the possibility of academic fusion using longitudinal or multi-phase investigations that hone further both theoretical and practical knowledge of sustainable AI HRM systems. Also mentioned in the author profile is the urgency of creating collaborative research networks, institutional, and funding of interdisciplinary teams to achieve stemming knowledge growth, theory building and high-impact journal publications on sustainable management, HR analytics and organisational innovation to inform academia and practice. Based on these background understandings, future research needs to deal with the limitations of existing literature, adding a variety of types of data, including patents and industry reports, to present the bigger picture of these technological applications, and elaborate on cross-cultural applications, long-term effects, technology assimilation, and sector-related challenges.

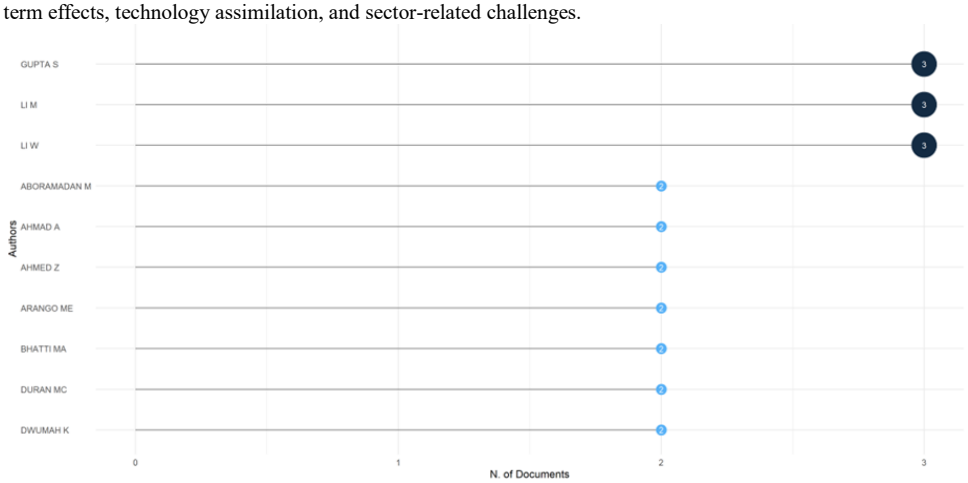

Figure 9: Most Relevant Authors of Research on Sustainability and Employee Commitment

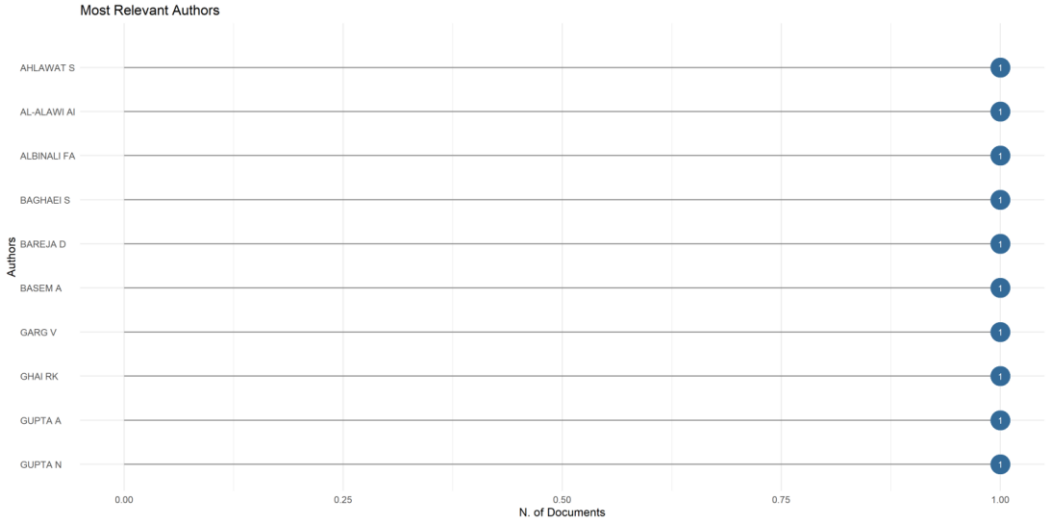

Figure 10: Most Relevant Authors of Research on AI Innovation and Green HR Practices

4.4. Keyword Co-occurrence Analysis

The conceptual map shows how main themes in the literature on the topic of Green Human Resource Management, Sustainable HRM, Artificial Intelligence, and Employee Engagement are interconnected as discovered through bibliometric co-occurrence analysis. It identifies two major clusters: one red cluster, which includes sustainable and green HRM practices, which can be summarised as waste control, resources distribution, and environmental technologies, and a green cluster that is associated with AI applications such as machine learning and performance management. The importance of employee engagement as a bridging node between the AI-driven technological sphere and HR strategies centred on sustainability remains significant, whereas sustainable development is identified as an essential connector, marking its significant importance as a unifying model in combining the use of technological innovations with HRM in order to make organisations more resilient. All these organisational insights during the emergent and interdisciplinary expansion of the field support the idea of the role of AI in HR services, gradually imitating GHRM, and open the way to more specific future studies, such as longitudinal studies, combined theoretical approaches, cross-regional comparative research, and industry-related case studies using various data streams such as patents to understand the actual effects of AI on sustainable HR practices. Keywords co-occurrence maps are shown in Figures 11 and 12 and can be used to identify the main topics. Figure 11, devoted to sustainability and employee commitment demonstrates 4 clusters: a red cluster, representing traditional HRM aspects such as employee engagement, job satisfaction, talent management, and performance; a green cluster, describing environmental aspects such as green HRM, green creativity, and corporate sustainability; a blue cluster, which connects HRM with environmental protection and different sustainability; and a yellow cluster which accentuates personnel training and managerial branch of involvement in GHRM. In line with the conceptual map, Figure 12, on AI innovation and Green HR practices, indicates two dominant clusters, namely, a red one on sustainability-related HR concepts such as green human resource management, waste management, resource allocation and environmental technology; and a green one on the AI-driven terms, such as artificial intelligence, machine learning, performance management and employee engagement. The demand to bridge nodes, such as engagement with employees, and sustainable development, is an emphasis on integration opportunities, which is reflected by a dynamic research environment in which HRM dictates employee well-being, environmental performance, and technological symbiosis.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

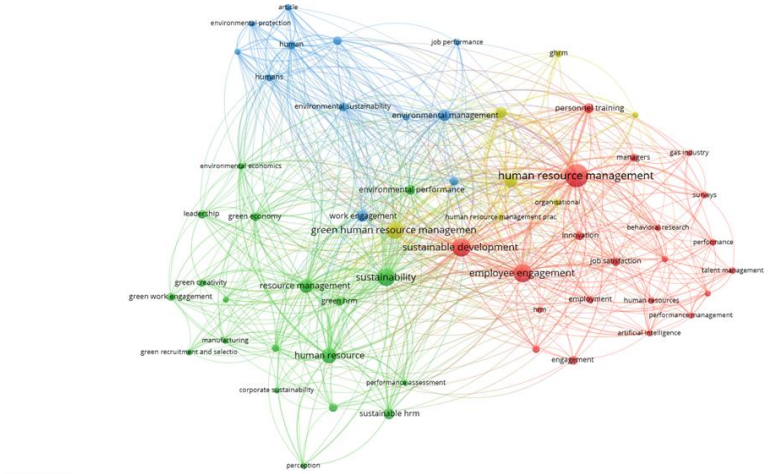

Figure 11: Keyword Co-occurrence Analysis of Research on Sustainability and Employee Commitment

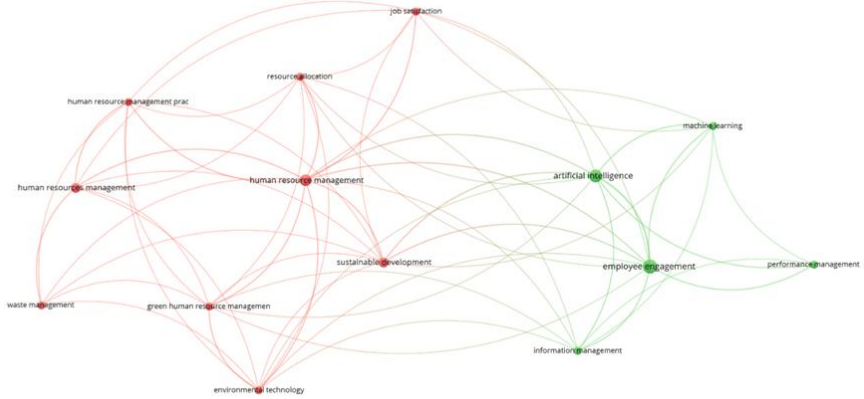

Figure 12: Keyword Co-occurrence Analysis of Research on AI Innovation and Green HR Practices

4.5. Temporal Keyword Co-Occurrence Analysis

Figures 15 and 16 provide the three-field plot analysis that will clearly explain the relationship between the dynamics of the sources of publications, prevailing research topic, and author country within the study of sustainability-employee commitment and AI innovation-Green HR practices, respectively. Figure 15 shows the most significant journals, including Sustainability and Corporate Social Responsibility and Environmental Management; as primary outlets, it is clear that the high-impact scholarly research on fundamental themes in green HRM, engagement in human resource and sustainable HRM, represents a solid global initiative to ensure sustainability is enshrined into HR systems to ensure increased organisational and environmental results. The spatial distribution of prolific contributions is an Indian, Chinese, Pakistani, and Malaysian, impregnating leadership initiative that is being signalled, reinforced by the other players, the older players such as the USA and the UK, which, when combined, will enhance the need among emerging economies to implement context-specific sustainable HR strategies in the face of rapid industrialisation. In Figure 14, terms such as environmental technology, green human resource management, and resource allocation appear in darker hues, indicating earlier foundational focus areas, whereas employee engagement, machine learning, and performance management emerge in lighter shades, highlighting a progression toward leveraging AI for strategic HR outcomes. These visualisations reinforce the field's maturing trajectory, from conceptual grounding to applied specialisations, with sustainable development and employee engagement as persistent bridging connectors that underscore opportunities for integrating AI with green HRM to enhance organisational resilience.

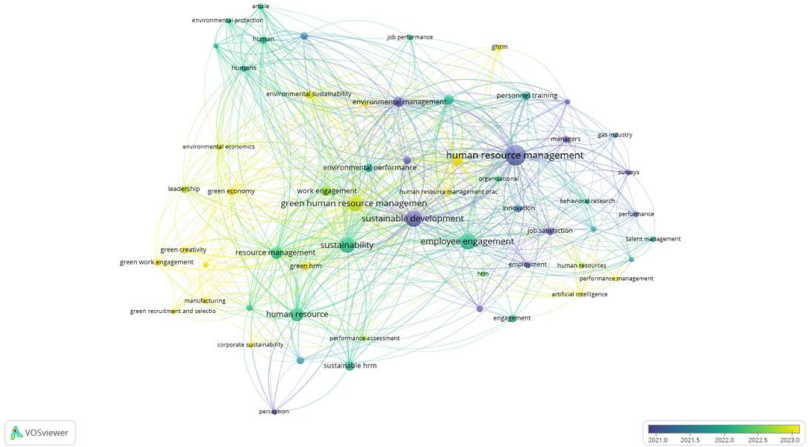

Figure 13: Temporal Keyword Occurrence Analysis of Research on Sustainability and Employee-commitment

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

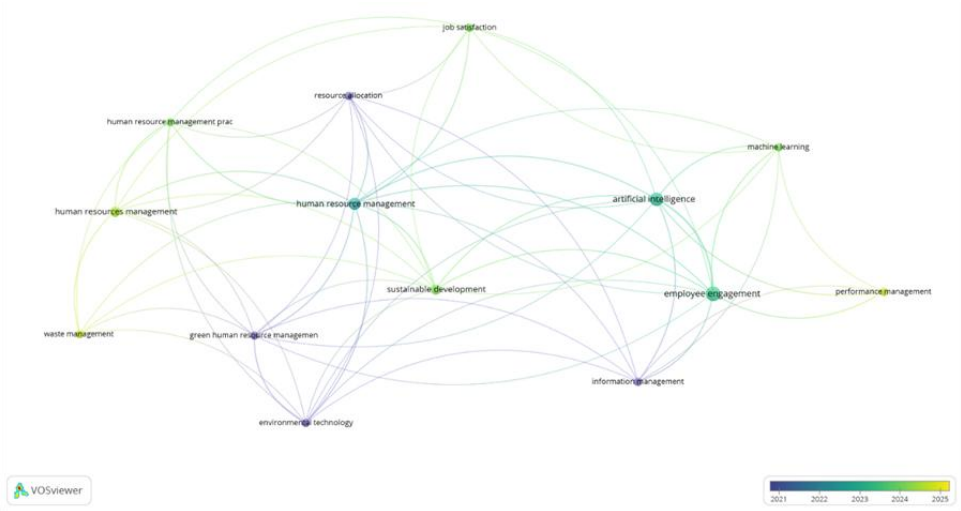

Figure 14: Temporal Keyword Co-Occurrence Analysis of Research on AI Innovation and Green HR Practices

4.6. Three-Field Plot Analysis

The analyses of three fields, including the plot in the three figures of 15 and 16, are an excellent demonstration of the interrelationship between publication sources, prevailing research topics, and the countries of contributing authors in the field of sustainability-employee commitment and AI innovation-Green HR practices, respectively. Figure 15 shows that influential journals like Sustainability, Corporate Social Responsibility, and Environmental Management control the spotlight as the leading sources and channels of high-impact research on key topics such as green HRM, employee engagement, and sustainable HRM- indicating a strong global agenda to introduce sustainability into HR systems to ensure improved organisational and environmental performance. Geographically, bountiful efforts in India, China, Pakistan and Malaysia are positive signs of a growing leadership by emerging markets, surpassed by the stable efforts of existing hubs like the USA and the UK that all add to the pronounced levels of urgency around location-specific approaches to sustainable HR. The same structure is replicated in Figure 16 devoted to AI-driven Green HR, where the emphasis is placed on related elite journals, and the themes of AI integration, machine learning, performance management, and resource optimisation are signalled or flaunted in the background, thus demonstrating the accelerating force of technological changes on green changes. Their strong interconnections between disciplines in both visuals serve to vigorously reaffirm an increasingly robust research ecosystem, where thick inter-regional networking and overarching themes intersect not only to drive the spread of knowledge but also to create a single, practically operative paradigm on how AI-enhanced green HRM could effectively address sustainability issues with accuracy and non-specialised cross-cultural applicability never before seen.

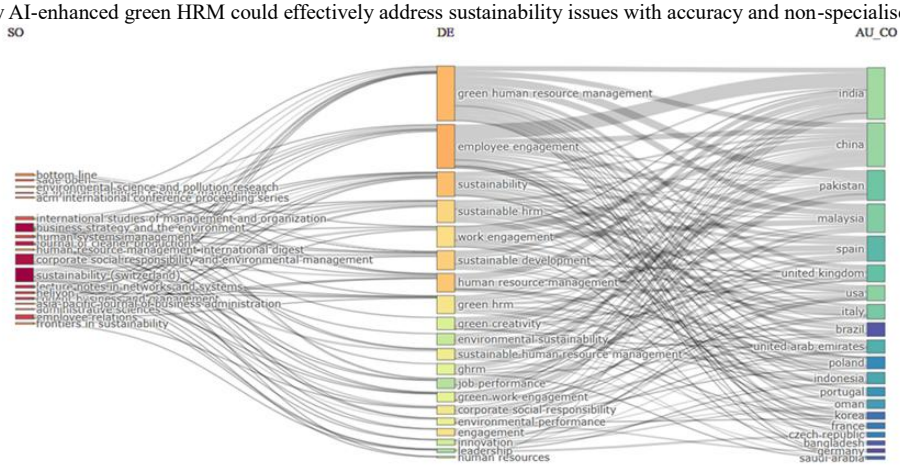

Figure 15: Three-Field Plot Analysis of Research on Sustainability and Employee Commitment

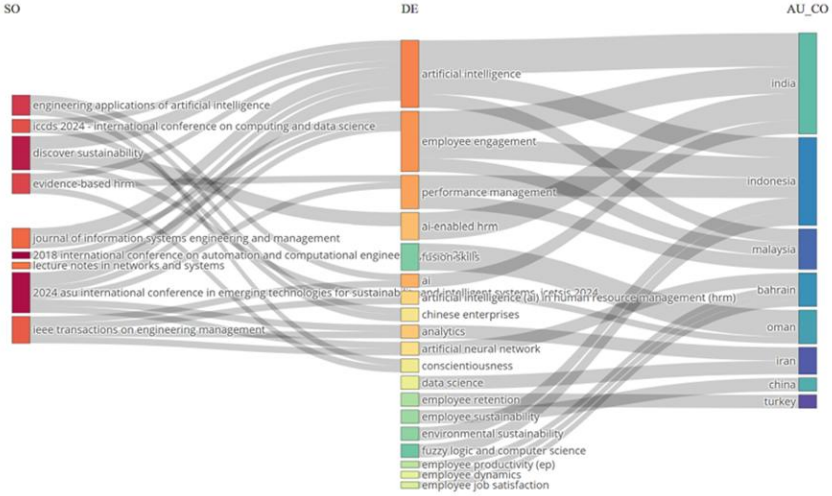

Figure 16: Three-Field Plot Analysis of Research on AI Innovation and Green HR Practices

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

4.7. Systematic Review

This part gives a systematic account of the most impactful research on Green HRM and Sustainable HRM, especially in how they are influenced by the topic of employee engagement and artificial intelligence in the current interdisciplinary emergence of the field and publication boom after 2023 (Alherimi et al., 2025; Kaplan and Haenlein, 2018). Table 1 shows the top 10 referenced papers in conventional GHRM research (without their explicit focus on AI), which have an impact on the measures of bibliometrics, such as total citations, citations per year, DOI, and normalised citation scores (Jia and Hou, 2024; Jiang et al., 2012). The top 10 papers in the field of AI innovation and Green HR practices are listed in Table 2, highlighting the emerging synergies between sustainability-oriented HR practices and AI-based instruments such as machine learning, although they are lower in citation rates because of the recency factor (Maghsoudi et al., 2023). Combined, these tables will give researchers firsthand information on the basic and advanced works that prove the presence of human-AI symbiosis in the organisational decision-making (Jarrahi, 2018), and the gaps that may be pursued, including longitudinal research and cross-regional comparisons, and alternative sources of information, such as patents (Tukiran & Desianti, 2025; Priyanti et al., 2025).

Table 1: Top 10 Research Papers of GHRM Studies

Title	DOI	Total Citations	Total Citations Per Year	Normalised Total Citations
"Progressing in the change journey towards sustainability in healthcare: the role of 'Green' HRM"	10.1016/j.jclepro.2016.02.031	300	30.00	2.90
"Effects of 'green' training on pro-environmental behaviours and job satisfaction: Evidence from the Italian healthcare sector"	10.1016/j.jclepro.2019.04.048	270	38.57	8.46
"Green human resource management: a comparative qualitative case study of a United States multinational corporation"	10.1080/09585192.2015.1052087	224	22.40	2.16
"The effect of green HRM on employee green behaviours in higher education: the mediating mechanism of green work engagement"	10.1108/IJOA-05-2020-2190	221	55.25	6.15
"Leveraging green human resource practices to achieve environmental sustainability"	10.1016/j.jclepro.2020.121137	136	22.67	4.25
"Linking green HRM practices to environmental performance through pro-environment behaviour in the information technology sector"	10.1108/SRJ-12-2019-0403	116	29.00	3.23
"Achieving green product and process innovation through green leadership and creative engagement in manufacturing"	10.1108/JMTM-01-2021-0003	105	26.25	2.92
"The effects of green human resource management and perceived organisational support for the environment on green and non-green hotel employee outcomes"	10.1016/j.ijhm.2022.103202	101	25.25	2.81
"Can green behaviours really be increased for all employees? Trade-offs for "deep greens" in a goal-oriented green human resource management intervention"	10.1002/bse.2367	87	14.50	2.72
"The link between socially responsible human resource management and intellectual capital"	10.1002/csr.1658	78	11.14	2.45

Table 2: Top 10 Research Papers of AI and GHRM

Title	DOI	Total Citations	Total Citations Per Year	Normalised Total Citations
"Application of Artificial Intelligence for Sustaining Green Human Resource Management"	10.1109/ICACE.2018.8686988	43	5.38	1.00
"Architecting the Future: Exploring the Synergy of AI-Driven Sustainable HRM, Conscientiousness, and Employee Engagement"	10.1007/s43621-024-00214-5	13	6.50	3.61
"Unveiling the Retention Puzzle for Optimising Employee Engagement and Loyalty Through Analytics-Driven Performance Management: A Systematic Literature Review"	10.1109/ICETSIS61505.2024.10459383	3	1.50	0.83
"The effect of AI-enabled HRM dimensions on employee engagement and sustainable organisational performance: fusion skills as a moderator"	10.1108/EBHRM-02-2023-0038	2	2.00	4.00
"Integrating AI Tools into HRM to Promote Green HRM Practices"	10.1007/978-981-99-9489-2_22	1	0.50	0.28
"Exploring the Impact of AI on Human Resource Management: A Case Study of Organisational Adaptation and Employee Dynamics"	10.1109/TEM.2024.3457520	1	0.50	0.28
"Unlocking the Potential of Artificial Intelligence in Human Resource Management: A Review of Applications, Challenges, and Future Directions"	10.52783/jisem.v10i8s.1049	0	0.00	0.00
"Integrating Sustainable HRM, AI, and Employee Well-Being to Enhance Engagement in Greater Jakarta: An SDG 3 Perspective"	10.1051/e3sconf/202560100020	0	0.00	0.00
"Investigating Employee Sustainability through Analysis of Retention Policies in Selected IT Companies 4.0 and the Role of AI"	10.1109/ICCDS60734.2024.10560370	0	0.00	0.00
"Examining the application of strategic management and artificial intelligence, with a focus on artificial neural network modelling to enhance human resource optimisation with advertising and brand campaigns"	10.1016/j.engappai.2025.110029	0	0.00	0.00

5. Discussion

The analysis of the results of the integrated systematic reviews points to a paradigm shift in the educational environment of Human Resource Management, and specifically at the influence of both environmental sustainability and artificial intelligence. The 2000-2025 longitudinal analysis shows that the evolution of the field was, however, relatively flat during the early years, but then, during the period of 2018, it started to rise rapidly, reaching 4 articles in 2018, 58 articles in 2024. This accelerated augment spells a human obligation around the world to align organisational practices with the United Nations Sustainable Development Goals. The emerging economies of South and East Asia are mostly the main driving force of the research, though India has taken the most significant role in scientific production (25 documents), as well as China and Indonesia. This geographical proximity implies that nations with high levels of environmental deficits and high rates of digital innovation are leading the pack when it comes to examining how Green HRM and AI can evolve together and create a system of employee involvement. Thematic analysis shows that there is a distinct shift in the original principles behind the sustainability and organisational commitment to technologically touch base. The literature of the 20212022 period was particularly concentrated on the concept of sustainable development and overall employee engagement. In 2023, however, the discussion began to focus on more professional matters like green recruitment, green creativity and digital transformation. The adoption of artificial intelligence has become one of the essential facilitators of these green programs since AI-based solutions are capable of streamlining recruitment, performance management and, at the same time, minimising the carbon footprint of an organisation. As a main arena of this interdisciplinary discussion, academic journals such as Sustainability, Corporate Social Responsibility and Environmental Management, as well as engineering-related journals,

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

including IEEE Transactions on Engineering Management. The synergistic nature of AI-based sustainable HRM, as well as employee engagement, is a notable finding in the argument. There is an indication that AI and green HR practices will importantly result in employee engagement and retention rate by 20. This is usually done by means of an AI-proposed sustainability structure and customised feedback systems that instil a sense of contributions and organisational citizenship. Nonetheless, the shift to these high-tech sustainable systems demands that one go beyond the traditional theoretical frameworks, such as the Ability-Motivation-Opportunity perspective, to more holistic ones that can explain psychological ownership and leadership roles. The intellectual structure of the field is still somewhat fragmented in spite of the fact that the number of publications has increased. According to the law of Lotka, there is a significant number of authors (around 93.5 per cent) who have only done one document in this particular niche. This fragmentation suggests that people are studying the intersection of AI and Green HRM, but these studies are not carried out in the form of sustained and long-term research clusters. The future work should be aimed at overcoming the specified barrier and introducing collaborative interdisciplinary connections between social sciences and technological progress, so that AI can be introduced in a manner that enables honesty and neutrality toward employees to preserve their confidence and long-term participation in the work.

6. Conclusion

This paper is a meta-analysis of literature on Green HRM and Sustainable HRM, highlighting its traditional practices as exemplified in the top-cited Table 1 papers such as the effects of green training on pro-environmental behaviours (normalized citations: 8.46), the influence of green training on job satisfaction and performance (normalized citations: 2.90) as the top-cited studies which point to established, empirically validated influence of green training, sustainable leadership, and perceived organizational support. By contrast, Table 2 demonstrates that, as AI is integrated with GHRM, references to the new discussions are fewer because of the recency effect (e.g., 43 citation to Application of Artificial Intelligence for Sustaining Green Human Resource Management); nonetheless, undoubtedly, there are bright, expanding synergies in the recruitment, performance management and engagement because of machine learning, analytics and AI technologies, and these are more scalable due to the growth after 2023 (Lozano, 2008). Conventional GHRM is therefore able to provide tried-and-tested, implementable strategies without any tech reliance, with normalised scores reaching 8.46 in areas such as Italian healthcare (Gupta, 2018). On the other hand, AI-powered GHRM offers radical scales, accuracy, and symbiosis between humans and AI in organisational decision-making (Jarrahi, 2018), ethical advances in recruitment and training, analytic, but requiring to tackle ethical domain, organisational preparedness, longitudinal data, and multiple sources such as patents (Saxena & Mishra, 2025) This distinction highlights the current reliability of traditional GHRM as compared to the high-potential innovation of AI, where integrated and human-focused methods of robust sustainability are necessary, which is upheld by the emergent trends that put adaptability and ethical AI-HRM fusion on high priority (Davenport et al., 2019; Jia and Hou, 2024; Jiang et al., 2012). Future Research Agenda The next generation of AI-GHRM integration must go beyond the nascent stage of the current research and include more holistic models of the three pillars of sustainability, namely: economic, environmental, and social, as opposed to the previous Ability-Motivation-Opportunity viewpoint. Such a shift would enable a more comprehensive evaluation of the effects of AI-induced sustainable human resource practices on various organisational and employee consequences. Additionally, it has great potential to carry out comparative research in various geographical locations to find out how various cultural, economic and regulatory settings affect the adoption and performance of such technological integrations. Another area of study that needs to be carried out in the future is the sector-specific issues and the moderating influence of the psychological ownership and leadership positions on the understanding of how the practices result in the rise of organisational change. Society positively responds to empowering the empirical background of the field by proposing the change of cross-sectional designs to longitudinal or multi-phase projects that can create a cause-and-effect relationship and capture how systems incorporating AI evolve. In future research, it is necessary to consider the possibility of common method bias by using longer data collection waves (which should preferably be further than short intervals, such as the two weeks), by more solid intervals, such as three months or even more. The study was also suggested as it might have been enhanced with several sources of data besides the usual academic articles (patents, conference proceedings and industry reports). Since the existing literature is typified by disjointed and separate individual outputs with numerous authors creating only one report, there is a strong need to establish collaborative research networks and interdisciplinary groups encompassing management, engineering, sustainability, and computer science. The future agendas must consider building on cumulative knowledge by institutional collaboration and investment in interdisciplinary research projects instead of broad exploration to develop research clusters and specialised inquiry. Through theory construction and publication in high-impact journals on sustainable management and HR analytics, the discipline can better align its results to influence both the scholarly domain and industry.

Conflict of Interest

All authors declare that they have no conflicts of interest.

References

Aboramadan, M. (2022). The effect of green HRM on employee green behaviours in higher education: the mediating mechanism of green work engagement. *International Journal of Organisational Analysis*, *30*(1), 7–23. https://doi.org/10.1108/ijoa-05-2020-2190

Agustini, I. G. A. A., Hadikusumo, R. A., Yuliana, Y., & Udodiugwu, M. I. (2025). ANALYSIS OF e-HRM MODEL AND PERCEIVED ORGANIZATIONAL SUPPORT ON EMPLOYEE ENGAGEMENT: A STUDY OF ONLINE TRANSPORTATION DRIVERS IN INDONESIA. *Maker Jurnal Manajemen*, *11*(1), 103. https://doi.org/10.37403/mjm.v11i1.832

Al-Alawi, A. I., & Albinali, F. A. (2024). Unveiling the retention puzzle for optimising employee engagement and loyalty through analytics-driven performance management: A systematic literature review. In *2024 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSIS)* (pp. 292–296). IEEE.

Alherimi, N., Abdulmaksoud, S., & Bahroun, Z. (2025). A Systematic Literature Review of Artificial Intelligence Advancements in Green Human Resource Management. *Sustainability*, *17*(22), 10283. https://doi.org/10.3390/su172210283

Bareja, D., & Ghai, R. K. (2024). Investigating employee sustainability through analysis of retention policies in selected IT companies 4.0 and the role of AI. *2024 International Conference on Computing and Data Science (ICCDS)*.

Barrena-Martinez, J., López-Fernández, M., & Romero-Fernández, P. M. (2019). The link between socially responsible human resource management and intellectual capital. *Corporate Social Responsibility and Environmental Management*, *26*(1), 71–81. https://doi.org/10.1002/csr.1658

Baumruk, R. (2004). The missing link: the role of employee engagement in business success. *Workspan*, *47*, 48.

Begum, S., Xia, E., Ali, F., Awan, U., & Ashfaq, M. (2022). Achieving green product and process innovation through green leadership and creative engagement in manufacturing. *Journal of Manufacturing Technology Management*, *33*(4), 656–674. https://doi.org/10.1108/jmtm-01-2021-0003

Bunge, J., Cohen-Rosenthal, E., & Ruiz-Quintanilla, A. (1996). Employee participation in pollution reduction: Preliminary analysis of the Toxics Release Inventory. *Journal of Cleaner Production*, *4*(1), 9. https://doi.org/10.1016/s0959-6526(96)00006-6

Daily, B. F., & Huang, S. (2001). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of Operations & Production Management*, *21*(12), 1539. https://doi.org/10.1108/01443570110410892

Davenport, T. H., Guha, A., Grewal, D., & Breßgott, T. (2019). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, *48*(1), 24. https://doi.org/10.1007/s11747-019-00696-0

Davis, M. C., Unsworth, K. L., Russell, S. V., & Galvan, J. J. (2020). Can green behaviours really be increased for all employees? Trade-offs for "deep greens" in a goal-oriented green human resource management intervention. *Business Strategy and the Environment*, *29*(2), 335–346. https://doi.org/10.1002/bse.2367

Frank, F. D., Finnegan, R., & Taylor, C. R. (2004). *The Race for Talent: Retaining and Engaging Workers in the 21st Century*. *27*(3), 12. http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.514.4132

Garg, V., Srivastav, S., & Gupta, A. (2018). Application of artificial intelligence for sustaining green human resource management. *2018 International Conference on Automation and Computational Engineering (ICACE)*, 113–116.

Goswami, I., & D'silva, N. R. (2025). Interplay between training and development, retention and employee engagement: A systematic literature review using PRISMA and future agenda. *Asia-Pacific Journal of Management Research and Innovation*, *21*(1–2), 7–20. https://doi.org/10.1177/2319510x251369220

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 6141-6150

Gupta, H. (2018). Assessing an organisation's performance based on GHRM practices using BWM and Fuzzy TOPSIS. *Journal of Environmental Management*, *226*, 201–216. https://doi.org/10.1016/j.jenvman.2018.08.005

Haddock-Millar, J., Sanyal, C., & Müller-Camen, M. (2016). *Green human resource management: a comparative qualitative case study of a United States multinational corporation. The international journal of human resource management*. *27*, 192–211.

Herlina, M. G., & Iskandar, K. (2025). Integrating sustainable HRM, AI, and employee well-being to enhance engagement in Greater Jakarta: An SDG 3 perspective. In *E3S Web of Conferences* (Vol. 601). EDP Sciences.

Jangbahadur, U., Ahlawat, S., Rozera, P., & Gupta, N. (2025). The effect of AI-enabled HRM dimensions on employee engagement and sustainable organisational performance: fusion skills as a moderator. *Evidence-Based HRM: A Global Forum for Empirical Scholarship*, *13*(1), 85–107. https://doi.org/10.1108/ebhrm-02-2023-0038

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organisational decision making. *Business Horizons*, *61*(4), 577. https://doi.org/10.1016/j.bushor.2018.03.007

Jenkins, B. (2002). Organisation for Sustainability. *Australian Journal of Environmental Management*, *9*(4), 243–251.

Jia, X., & Hou, Y. (2024). Architecting the future: exploring the synergy of AI-driven sustainable HRM, conscientiousness, and employee engagement. *Discover Sustainability*, *5*(1). https://doi.org/10.1007/s43621-024-00214-5

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How Does Human Resource Management Influence Organisational Outcomes? A Meta-analytic Investigation of Mediating Mechanisms. *Academy of Management Journal*, *55*(6), 1264. https://doi.org/10.5465/amj.2011.0088

John, J. E., & Pramila, S. (2024). Integrating AI tools into HRM to promote green HRM practices. In *ICT: Smart Systems and Technologies* (pp. 249–259). Springer Nature Singapore.

Kaplan, A., & Haenlein, M. (2018). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, *62*(1), 15. https://doi.org/10.1016/j.bushor.2018.08.004

Karatepe, O. M., Hsieh, H., & Aboramadan, M. (2022). The effects of green human resource management and perceived organisational support for the environment on green and non-green hotel employee outcomes. *International Journal of Hospitality Management*, *103*(103202), 103202. https://doi.org/10.1016/j.ijhm.2022.103202

Leidner, S., Baden, D., & Ashleigh, M. J. (2019). Green (environmental) HRM: aligning ideals with appropriate practices. *Personnel Review*, *48*(5), 1169–1185. https://doi.org/10.1108/pr-12-2017-0382

Lozano, R. (2008). Developing collaborative and sustainable organisations. *Journal of Cleaner Production*, *16*(4), 499–509. https://doi.org/10.1016/j.jclepro.2007.01.002

Lozano, R., & Barreiro-Gen, M. (2022). Organisations' contributions to sustainability. An analysis of impacts on the Sustainable Development Goals. *Business Strategy and the Environment*. https://doi.org/10.1002/bse.3305

Maghsoudi, M., Shahri, M. K., Kermani, M. A. M. A., & Khanizad, R. (2023). Mapping the Landscape of AI-Driven Human Resource Management: A Social Network Analysis of Research Collaboration. *arXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2308.09798

Marrucci, L., Daddi, T., & Iraldo, F. (2023). *Institutional and stakeholder pressures on organisational performance and green human resources management. Corporate Social Responsibility and Environmental Management*. *30*, 324–341.

May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organisational Psychology*, *77*(1), 11. https://doi.org/10.1348/096317904322915892

Mishra, R. K., Sarkar, S., & Kiranmai, J. (2014). Green HRM: innovative approach in Indian public enterprises. *World Review of Science Technology and Sustainable Development*, *11*(1), 26. https://doi.org/10.1504/wrstsd.2014.062374

Muisyo, P. K., Qin, S., Ho, T. H., Julius, M. M., & Barisoava Andriamandresey, T. (2022). Implications of GHRM on organisational citizenship behaviour: the mediating role of enablers of green culture. *International Journal of Manpower*, *43*(3), 719–741. https://doi.org/10.1108/ijm-05-2020-0245

Nurimansjah, R. A. (2023). Dynamics of Human Resource Management: Integrating Technology, Sustainability, and Adaptability in the Modern Organisational Landscape. *Golden Ratio of Mapping Idea and Literature Format*, *3*(2), 104. https://doi.org/10.52970/grmilf.v3i2.324

Ojo, A. O., Tan, C. N.-L., & Alias, M. (2022). Linking green HRM practices to environmental performance through pro-environment behaviour in the information technology sector. *Social Responsibility Journal*, *18*(1), 1–18. https://doi.org/10.1108/srj-12-2019-0403

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

Pinzone, M., Guerci, M., Lettieri, E., & Huisingh, D. (2019). Effects of 'green'training on pro-environmental behaviours and job satisfaction: Evidence from the Italian healthcare sector. *Journal of Cleaner Production*, *226*, 221–232.

Priyanti, I. A. D., Nisa', Z., & Yuniawan, A. (2025). Transformational leadership, organisational culture, and employee engagement: A systematic literature review. *Economic and Business Horizon*, *4*(2), 311–318. https://doi.org/10.54518/ebh.4.2.2025.675

Renwick, D., Redman, T., Maguire, S., & Robertson, M. (2008). Green HRM: A review, process model, and research agenda. *Nottingham Trent University's Institutional Repository (Nottingham Trent Repository)*.

Richman, A. (2006). Everyone wants an engaged workforce. How can you create it? *Workspan*, *49*, 36.

Ruoxing, C., Jianning, W., Basem, A., Hussein, R. A., Salahshour, S., & Baghaei, S. (2025). Examining the application of strategic management and artificial intelligence, with a focus on artificial neural network modelling to enhance human resource optimisation with advertising and brand campaigns. *Engineering Applications of Artificial Intelligence*, *143*(110029), 110029. https://doi.org/10.1016/j.engappai.2025.110029

Saxena, M., & Mishra, D. K. (2025). Artificial intelligence: the way ahead for employee engagement in corporate India. Global Knowledge. *Memory and Communication*, *74*(1–2), 111–127.

Shaw, K. (2005). An engagement strategy process for communicators. *Strategic Communication Management*, *9*(3), 26.

Shoaib, M., Abbas, Z., Yousaf, M., Zámečník, R., Ahmed, J., & Saqib, S. (2021). The role of GHRM practices towards organisational commitment: A mediation analysis of green human capital. *Cogent Business & Management*, *8*(1), 1870798. https://doi.org/10.1080/23311975.2020.1870798

Tukiran, M., & Desianti, L. C. (2025). The role of training and development in enhancing employee engagement: A Systematic Literature Review. *Feedforward: Journal of Human Resource*, 77–95. https://doi.org/10.19166/ff.v5i2.10268

Walter, W. (1996). *Greening people, human resources, and environmental management*. http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=007416218&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human Resources and the resource-based view of the Firm. *Journal of Management*, *27*(6), 701. https://doi.org/10.1177/014920630102700607