International Journal of Convergent Research 1(1) July - December (2024)

IJCR
International Journal of Convergent Research

International Journal of Convergent Research

Journal homepage: International Journal of Convergent Research

Artificial Intelligence (AI) in Human Resource Management (HRM): A Bibliometric Research

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Citation: Sehgal, W. & M. Thenmozhi. (2024), Artificial Intelligence (AI) in Human Resource Management (HRM): A Bibliometric Research, *International Journal of Convergent Research (IJCR)*, 1(1), 24-38

ARTICLE INFO

Received: 19th August 2024
Accepted: 01st November 2024

ABSTRACT

Purpose: The purpose of this study is to conduct a bibliometric analysis to explore the scholarly literature on the integration of Artificial Intelligence (AI) in Human Resource Management (HRM), by focusing on identifying trends, key contributors, research themes, and emerging areas of interest.
Methodology/Approach: The research employs systematic bibliometric analysis, utilizing academic databases such as Scopus to collect relevant literature. Keywords including "AI," "Artificial Intelligence," "HRM," and "Human Resource Management" were used to retrieve documents. Bibliometric software such as bibliophily is utilized to visualize co-authorship networks, citation patterns, keyword co-occurrence, and publication trends.
Findings: The analysis shows how AI applications in HRM have developed over time, moving from theoretical explorations to empirical studies and the incorporation of cutting-edge AI technologies. Important researchers and research clusters are highlighted, along with field-wide collaborative networks and key contributors. Personalized learning, employee performance prediction, AI-based hiring, and ethical issues are among the often-studied topics. Emerging fields include cross-cultural research, ethical frameworks for AI deployment, and the integration of AI with emerging technologies.
Originality: By providing an organized bibliometric overview of the academic environment on AI in HRM and offering insights into trends, important contributors, and developing research areas, this study adds to the body of current literature. The methodical approach used in this study guides future research and practice while also improving our grasp of the revolutionary potential of AI in HRM practices.

Keywords: Artificial Intelligence, HRM, bibliometric analysis, trends, research theme.

INTRODUCTION

Background of Study

The advent of artificial intelligence (AI) marks a watershed moment in the realm of technology, heralding a new era of innovation and disruption. AI, characterized by its ability to emulate human-like intelligence and learning capabilities, has transcended traditional boundaries, revolutionizing problem-solving methodologies, decision-making processes, and automation paradigms across various industries (Rudra Kumar & Gunjan, 2022). From healthcare to finance, manufacturing to entertainment, AI's impact is pervasive, fundamentally altering the way organizations operate and compete in the global marketplace.

Within this transformative landscape, the domain of Human Resource Management (HRM) stands poised for significant evolution. Historically, HRM has been tasked with overseeing the recruitment, development, and retention of talent within organizations, serving as a crucial conduit between employees and management. However, the traditional HRM model, while effective in many respects, has faced challenges in adapting to the complexities of the modern workforce and the dynamic

nature of contemporary workplaces.

Against this backdrop, the integration of AI in HRM represents a paradigm shift with profound implications. By harnessing AI-driven technologies, organizations can augment their HRM capabilities, unlocking new opportunities for efficiency, agility, and innovation. AI holds the promise of revolutionizing key aspects of HRM, which includes stuff like talent acquisition, performance management, learning and development, and employee engagement (Anshima et al., 2023). Through advanced analytics, predictive modelling, and automation, AI empowers HR professionals to make data-driven decisions, optimize processes, and enhance the overall employee experience.

Moreover, the emergence of AI in HRM underscores the convergence of technology and human capital management, blurring the lines between traditional HR functions and strategic business imperatives. As organizations increasingly recognize the strategic importance of their workforce in driving competitive advantage, AI presents a compelling opportunity to transform HRM from a reactive support function to a proactive driver of organizational success (Paigude et al., 2023).

However, amidst the promise of AI-driven HRM solutions, challenges and complexities abound. Ethical considerations, privacy concerns, and as well as the possibilities of algorithmic bias raise important queries about the responsible deployment of AI in HRM practices (Dixit et al., 2023). Moreover, the need to balance technological innovation with human-centric approaches presents a delicate balancing act for HR practitioners, as they navigate the evolving landscape of AI-enabled HRM.

In light of these developments, there is a pressing need for scholarly inquiry and empirical research to understand the implications, challenges, and advantages of incorporating AI into HRM. By delving into the intricacies of AI-driven HRM practices, researchers can contribute to a deeper understanding of this evolving field, informing best practices, guiding policy decisions, and influencing how work will be done in the digital age. Thus, the background of this study underscores the significance of exploring the intersection of AI and HRM and its implications for organizations, employees, and society at large.

Relevance of the Study

The integration of AI holds profound implications for HRM, promising to enhance personnel management, streamline administrative processes, and bolster organizational effectiveness (Anshima et al., 2023). The relevance of investigating AI in HRM lies in its multifaceted applications, spanning workforce analytics, employee training and development, performance management, and recruitment and selection (Paigude et al., 2023). By leveraging AI-driven solutions, HR professionals can access data-driven insights to reduce biases, improve judgements, and elevate the overall working environment for employees (Dixit et al., 2023). Amidst the contemporary challenges organizations face in attracting, retaining, and nurturing talent, AI presents a compelling opportunity to address these issues effectively (Bhupathi et al., 2023). The evolution of AI-driven tools and algorithms empowers HR practitioners to harness data-driven approaches, thereby optimizing HRM processes and strategies. However, as businesses increasingly embrace AI technologies in HRM practices, it becomes imperative to conduct a comprehensive assessment of the implications, challenges, and opportunities associated with this paradigm shift (Bankar & Shukla, 2023). This study aims to explain how AI can revolutionise HRM practices and address contemporary organizational challenges. Through empirical investigation and scholarly analysis, we seek to give insightful information regarding the evolving landscape of AI in HRM, thereby informing future research endeavours and practical applications in this dynamic field.

Objectives of the Study

The main goal of this study is to provide an extensive bibliometric analysis of academic literature on AI in HRM. Specifically, the study aims to achieve the following objectives:

i. Identify key trends and developments in the integration of AI technologies within HRM practices.
ii. Map out the intellectual landscape by analyzing citation patterns, collaboration networks, and research clusters.
iii. Highlight seminal works and influential contributors shaping the discourse on AI in HRM.
iv. Explore emerging research themes and areas of interest within the field.
v. Provide insights and directions for future research and practical implications for HR practitioners and organizational leaders.

The rationale of the Study

This study's justification is the increasing significance of AI in changing HRM procedures and its consequences for both employee welfare and company performance (Sonawane et al., 2022). This study aims to provide a structured overview of the body of literature by performing a bibliometric analysis, synthesizing information, and identifying knowledge gaps (Dutta & Mishra, 2023). Furthermore, a comprehensive examination of academic contributions can help guide future research as well as practical organizational decision-making in the quickly changing fields of artificial intelligence (AI) and human resource management (HRM) (Chitrao et al., 2022). The main purpose of our research is to provide important insights for future research

and practice as well as to further our understanding of the revolutionary potential of AI in HRM.

LITERATURE REVIEW

AI Applications in Recruitment and Selection

The integration of artificial intelligence (AI) in recruitment and selection processes has garnered significant attention within the domain of AI-driven Human Resource Management (HRM). This subsection of the literature review delves into the multifaceted applications of AI in optimizing hiring procedures, enhancing candidate experiences, and augmenting recruitment effectiveness.

Traditionally, the hiring process has been labour-intensive and time-consuming, characterized by manual resume screening, candidate ranking, and screening procedures. However, the advent of AI technology has revolutionized these practices, offering innovative solutions to streamline recruitment workflows and improve decision-making.

AI-powered algorithms facilitate automated resume processing, enabling organizations to efficiently analyze large volumes of applicant data and pinpoint the best applicants based on preset standards (Bhatt, 2023). Through the application of machine learning and natural language processing techniques, AI algorithms can discern relevant skills, experiences, and qualifications from resumes, significantly reducing time-to-fill and enhancing recruitment efficiency (Paigude et al., 2023). This automated screening process not only expedites candidate selection but also minimizes the risk of human bias, ensuring a fair and objective evaluation of candidates.

Furthermore, AI-driven technologies such as chatbots and virtual assistants play a pivotal role in enhancing the candidate's experience throughout the recruitment journey. These AI-enabled tools serve as virtual recruiters, interacting with candidates, scheduling interviews, and providing real-time feedback (Dutta et al., 2023). By offering personalized communication and timely assistance, chatbots and virtual assistants alleviate administrative burdens on HR professionals while fostering positive candidate perceptions of the organization.

Moreover, AI facilitates data-driven decision-making in recruitment and selection, enabling organizations to identify patterns, trends, and correlations within applicant data. By analyzing historical recruitment data and candidate profiles, AI algorithms can predict candidate success and fit within specific roles, guiding recruiters in making informed hiring decisions (Paigude et al., 2023). This predictive analytics capability empowers organizations to optimize their talent acquisition strategies, aligning recruitment efforts with organizational objectives and workforce requirements.

The application of AI in recruitment and selection represents a transformative paradigm shift in HRM practices. By automating mundane tasks, enhancing decision-making processes, and improving candidate experiences, AI-driven solutions offer unprecedented opportunities for organizations to optimize their hiring processes and acquire a strategic advantage in talent acquisition. However, it is essential for organizations to carefully navigate ethical considerations and ensure transparency and fairness in AI-enabled recruitment practices, thereby fostering trust and credibility among candidates and stakeholders.

AI for Performance Management and Employee Development

The utilization of artificial intelligence (AI) in performance management and employee development represents a pivotal frontier in AI-driven Human Resource Management (HRM). This subsection of the literature review examines AI's revolutionary potential for streamlining performance management procedures and fostering continuous employee development.

Technologies related to AI such as machine learning algorithms and predictive analytics, empower HR practitioners to gain deeper insights into employee performance, anticipate future trends, and deliver personalized feedback (Pavitra & Agnihotri, 2023). By analyzing vast troves of data encompassing performance metrics, project outcomes, and behavioural patterns, AI algorithms can identify correlations, trends, and performance drivers with unparalleled accuracy. This analytical prowess enables organizations to move beyond traditional performance appraisal methods towards dynamic, data-driven performance management systems.

One of the key advantages of AI-powered performance management lies in its ability to offer personalized feedback and coaching to employees. By leveraging AI algorithms, HR practitioners can deliver tailored feedback that addresses individual strengths, weaknesses, and developmental needs (Pavitra & Agnihotri, 2023). This customised strategy promotes a continual improvement in culture within the organization in addition to increasing staff motivation and engagement.

Moreover, AI facilitates the automation of routine performance management tasks, allowing HR professionals to devote more time to strategic endeavours. From goal setting and tracking to performance evaluation and feedback delivery, AI-driven systems streamline the entire performance management process, reducing administrative burdens and increasing efficiency (Pavitra & Agnihotri, 2023).

In addition to performance management, AI holds immense potential for supporting ongoing learning and skill development initiatives within organizations. AI-powered learning management systems (LMS) leverage machine learning

algorithms to deliver personalized training modules, recommend relevant learning materials, and monitor individual progress (Anshima et al., 2023). By analyzing employee skills gaps, learning preferences, and career aspirations, AI-driven LMSs can curate tailored learning experiences that resonate with individual employees, thereby enhancing learning outcomes and driving organizational growth.

The integration of AI in performance management and employee development heralds a new era of HRM innovation. By leveraging advanced analytics, personalized feedback mechanisms, and automated learning solutions, organizations can unlock new opportunities for optimizing employee performance, fostering talent development, and driving organizational success. However, organizations must address privacy concerns, ethical considerations, and employee apprehensions associated with AI-driven performance management systems, thereby ensuring transparency, fairness, and trustworthiness in HRM practices.

Ethical Considerations and Challenges of AI in HRM

While the integration of artificial intelligence (AI) holds immense potential to revolutionize HRM practices, it also presents a myriad of ethical considerations and challenges that must be addressed. This section of the literature review delves into the ethical dilemmas surrounding AI adoption in HRM and highlights the need for ethical principles and legal frameworks to mitigate risks and safeguard employee rights.

The privacy of data is one of the primary issues surrounding AI in HRM. Security concerns about sensitive personal data emerge as businesses gather and examine massive volumes of employee data to support AI-powered decision-making (Dutta & Mishra, 2023). To secure employee privacy and preserve faith in AI-enabled HRM systems, it is essential to ensure compliance with data protection legislation like GDPR and to have strong data governance procedures in place.

The topic of algorithmic bias is a crucial ethical consideration. Inadequate training or validation of AI algorithms may cause them to unintentionally reinforce preexisting biases in historical data, producing unequal results in the hiring, performance management, and talent development processes (Dutta & Mishra, 2023). Addressing algorithmic bias requires a concerted effort to diversify training data, employ fairness-aware algorithms, and implement bias detection and mitigation strategies to ensure equitable treatment of all employees.

Transparency is also a key ethical principle that must be upheld in AI-driven HRM practices. Employees should be aware of how AI algorithms work, what influences algorithmic decisions, and how these decisions may affect their future career prospects. (Dutta & Mishra, 2023). Enhancing transparency in AI systems fosters trust, accountability, and employee acceptance, thereby mitigating concerns surrounding algorithmic opacity and the "black box" phenomenon.

Furthermore, the adoption of AI in HRM necessitates a critical examination of its social and ethical ramifications. The potential for AI to influence job displacement and the reconfiguration of job roles underscores the importance of ethical foresight and responsible implementation practices (Sonawane et al., 2022). HR practitioners must consider the broader societal impacts of AI adoption, including implications for workforce diversity, inclusion, and socio-economic equality.

While AI offers unprecedented opportunities to enhance HRM practices, its adoption must be guided by ethical principles and legal frameworks to mitigate risks and ensure equitable treatment of employees. Organizations may embrace the revolutionary potential of AI in HRM while respecting ethical norms and fostering a culture of trust and justice in the workplace by addressing concerns related to data privacy, algorithmic bias, transparency, and social effects.

Integration of AI with Emerging Technologies in HRM

A new era in HRM innovation is being heralded by the integration of artificial intelligence (AI) with cutting-edge technologies like blockchain, augmented reality (AR), and virtual reality (VR). This section of the literature review explores the synergistic potential of combining AI with these cutting-edge technologies to enhance HRM practices and unlock new opportunities for employee engagement, productivity, and innovation.

Blockchain technology holds promise for revolutionizing HRM by offering enhanced security, transparency, and verifiability in employee records and credentials management (Dixit et al., 2023). By leveraging blockchain-based systems, organizations can create tamper-proof digital ledgers for recording employee data, including qualifications, certifications, and performance evaluations. This decentralized approach to data management ensures data integrity and reduces the risk of fraudulent activities, thereby enhancing trust and credibility in HRM processes.

Augmented reality (AR) and virtual reality (VR) technologies present exciting avenues for transforming employee training and development initiatives. By integrating AI-driven algorithms with AR and VR platforms, organizations can deliver immersive and interactive training experiences that simulate real-world scenarios (Dixit et al., 2023). AI algorithms can personalize training content based on individual learning styles, preferences, and performance metrics, thereby optimizing learning outcomes and knowledge retention. Moreover, AR and VR technologies facilitate virtual collaboration and remote teamwork, enabling employees to interact and collaborate seamlessly across geographical boundaries.

Furthermore, the integration of AI with emerging technologies opens up new possibilities for enhancing talent acquisition and recruitment processes. AI-powered chatbots and virtual recruiters can leverage natural language processing (NLP)

algorithms to engage with candidates, answer queries, and guide them through the recruitment journey (Dixit et al., 2023). By integrating AI-driven chatbots with AR and VR interfaces, organizations can create immersive recruitment experiences that showcase company culture, values, and job opportunities, thereby attracting top talent and enhancing candidate engagement.

The integration of AI with emerging technologies represents a paradigm shift in HRM practices, offering innovative solutions to address contemporary challenges and drive organizational success. By harnessing the collective capabilities of AI, blockchain, AR, and VR, organizations can create dynamic, data-driven HRM ecosystems that foster employee development, enhance recruitment experiences, and optimize workforce management processes. However, organizations need to remain vigilant about ethical considerations, data privacy, and user experience when deploying AI-enabled solutions in conjunction with emerging technologies, thereby ensuring responsible and effective implementation in the HRM domain.

AI-Enabled Diversity and Inclusion Initiatives

The utilization of artificial intelligence (AI) holds transformative potential for advancing diversity and inclusion (D&I) initiatives within organizations. This subsection of the literature review examines how AI-enabled HRM practices can mitigate biases, foster inclusivity, and establish fair workplaces where each employee feels appreciated and empowered to make a difference.

One of the key contributions of AI in D&I efforts lies in its ability to reduce biases in hiring, performance reviews, and talent management procedures (Bankar & Shukla, 2023). Traditional HR processes are susceptible to unconscious biases that can inadvertently disadvantage underrepresented groups. However, AI systems leverage data-driven algorithms to analyze candidate profiles, assess performance objectively, and identify talent based on merit rather than subjective factors. AI helps to ensure that everyone, regardless of origin or identity, has fairness and equal opportunity by reducing bias in decision-making processes.

Moreover, AI-enabled HRM practices offer proactive strategies for fostering diversity and inclusion within organizations. AI algorithms can analyze organizational data to identify patterns, trends, and areas for improvement in D&I efforts (Bankar & Shukla, 2023). By providing insights into workforce demographics, representation across different groups, and disparities in opportunities, AI empowers organizations to develop targeted interventions and initiatives that promote diversity, equity, and inclusion.

Furthermore, AI systems can assist in identifying unconscious biases in decision-making processes and providing recommendations for mitigating these biases (Bankar & Shukla, 2023). Through machine learning algorithms, AI can detect subtle patterns in decision-making that may reflect unconscious biases and offer interventions to counteract these biases. For example, AI algorithms can suggest diverse candidate pools for recruitment, flag biased language in job descriptions, and provide training recommendations to address implicit biases among employees.

AI-enabled HRM practices help to create inclusive work environments where all employees feel valued, respected, and encouraged to contribute their unique perspectives and talents by fostering a culture of fairness and equity (Bankar & Shukla, 2023). Organizations can benefit from varied viewpoints, creativity, and innovation as well as a sense of belonging and psychological safety within their workforce by utilizing AI to support diversity and inclusion programs.

AI holds immense promise for advancing diversity and inclusion efforts within organizations by reducing biases, providing actionable insights, and fostering inclusive work cultures. However, organizations need to approach AI implementation in D&I initiatives with sensitivity to ethical considerations, transparency, and stakeholder engagement, thereby ensuring that AI-driven interventions promote equity, fairness, and social justice in the workplace.

Future Directions and Research Opportunities

Future research in AI-driven HRM could explore interdisciplinary collaborations with fields such as psychology, sociology, and organizational behaviour to deepen our understanding of the human factors influencing AI adoption and usage (Rai & Singh, 2023). Studies that follow the effects of AI technologies overtime on work satisfaction, employee well-being, and organizational performance may yield important insights into the long-term effects of AI in HRM (Kiran et al., 2023). Furthermore, to guarantee that AI technologies are applied morally and fairly in corporate contexts, research concentrating on the creation of ethical standards, legal frameworks, and best practices for responsible AI deployment in HRM is crucial (Dutta et al., 2023).

The literature review highlights the diverse applications of AI in HRM, ranging from recruitment and selection to performance management, employee development, and diversity initiatives. Even though AI has a lot to offer HRM professionals, there are problems and ethical issues that need to be resolved. To ensure the responsible and equitable deployment of AI in organizational settings and to further our understanding of the transformative potential of AI in HRM, future research should concentrate on interdisciplinary collaborations, longitudinal studies, and the creation of ethical guidelines.

METHODOLOGY

Data Source

The information used in this research was taken from the Scopus database, which is recognized as a vast collection of academic literature from a variety of fields. Scopus is a great resource for bibliometric analysis since it offers access to a huge library of academic publications, conference proceedings, and peer-reviewed journals. Through the utilization of Scopus's comprehensive coverage and strong indexing capabilities, this study was able to gather a wide range of scholarly research on the application of artificial intelligence (AI) to human resource management (HRM). Using Scopus made it possible to access high-calibre, peer-reviewed literature, which allowed for in-depth investigation and critical analysis of themes, trends, and patterns in AI-driven HRM practices.

Search Process

The search process involved the following steps:

i. Initial search using the keywords "AI" and "HR" yielded 1,360 documents.

ii. To refine the search, documents published between 2013 and 2023 were considered, resulting in 912 documents.

iii. Further refinement was done using the following search query:

```
TITLE-ABS-KEY (ai AND hr) AND PUBYEAR > 2012 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "DECI") OR LIMIT-TO (SUBJAREA, "MULT")) AND (LIMIT-TO (AFFILCOUNTRY, "India")) AND (LIMIT-TO (LANGUAGE, "English"))
```

This query was tailored to retrieve documents with a focus on AI and HR, published between 2013 and 2023, with affiliations from India and written in English. This refined search yielded 132 documents as of 18th March 2024.

Data Collection

Exporting documents that were retrieved from the Scopus database in a format that was standardized and tailored for bibliometric analysis was part of the data-gathering process. This consistent style made it easier to extract relevant bibliographic information that is necessary for a thorough examination of the academic literature on the incorporation of artificial intelligence (AI) into human resource management (HRM).

Data Analysis

The collected data underwent comprehensive analysis using Biblioshiny, a powerful bibliometric analysis tool renowned for its diverse features tailored for visualizing and interpreting bibliographic data. Biblioshiny facilitated various analyses, including co-authorship networks, citation patterns, keyword co-occurrence, and publication trends, providing valuable insights into the scholarly landscape of AI in human resource management (HRM). Utilizing Biblioshiny's user-friendly interface, the extracted bibliographic details were systematically inputted into the tool, enabling seamless generation of interactive visualizations for exploration and interpretation of the data. These visualizations served as powerful aids in identifying key trends, influential authors, and emerging research themes within the field of AI in HRM. The use of Biblioshiny ensured robust and comprehensive analysis of the bibliographic dataset, enabling the generation of insights that informed the findings of this study. This study was able to get important insights into the academic landscape of AI in HRM by utilizing Biblioshiny's sophisticated analytical tools. This helped to increase knowledge of the field's dynamics, trends, and future research directions.

Limitations

Despite the comprehensive nature of Scopus as a repository of academic literature, this study acknowledges several limitations inherent in the data collection process and scope of analysis:

i. Incomplete Coverage: While Scopus provides access to a vast collection of scholarly papers, it may not include all pertinent works related to the topic of AI in HRM. Some relevant literature may be published in journals or conferences not indexed in Scopus, leading to potential gaps in the dataset.

ii. Language and Geographic Limitations: The search was confined to English-language publications connected to India, which may introduce bias and limit the generalizability of the findings. Restricting the search to a specific language and geographic region may overlook valuable insights and perspectives from non-English publications and other global contexts.

iii. Applicability of Results: The findings of this study may have limited applicability in different contexts or settings due to the focus on English-language publications connected to India. The insights derived from the analysis may

not fully capture the diverse range of perspectives, practices, and research trends prevalent in other regions or linguistic communities.

iv. Addressing Limitations: Despite these limitations, efforts were made to mitigate their impact on the study's validity and reliability. Careful consideration was given to the selection of search criteria, data extraction methods, and analytical techniques to ensure the robustness and integrity of the analysis. Additionally, transparency regarding the study's scope and limitations was maintained throughout the research process.

Although this study offers insightful information about the academic field of AI in HRM, to guarantee a nuanced comprehension of the research findings, it is crucial to recognize and resolve the inherent limits. Future research endeavours should strive to overcome these limitations by employing diverse search strategies, expanding the scope of analysis to encompass a broader range of languages and geographic regions, and adopting inclusive methodologies that capture diverse perspectives and contexts within the field of AI-driven HRM.

DATA ANALYSIS AND FINDINGS

Document Analysis

Table 1 provides the document analysis mentioning that the dataset comprises 132 documents published between 2014 and 2023, sourced from 96 different journals, books, and other scholarly sources. These documents exhibit an annual growth rate of 59.81%, indicating a significant increase in research output over the specified timespan. With an average age of 2.03 years, each document is reasonably recent. Moreover, the documents have received an average of 5.644 citations, indicating their impact and influence within the academic community.

In terms of document contents, a diverse range of keywords has been identified, including both Keywords Plus (606) and Author's Keywords (362), reflecting the multidimensional nature of research topics within the dataset. The dataset encompasses contributions from 376 authors, with 12 documents being authored by single authors. Collaboration among authors is prevalent, with an average of 3.28 co-authors per document. Additionally, international collaboration is evident, with 21.21% of documents featuring co-authorships across different countries.

Regarding document types, the dataset comprises various formats, including articles (37), books (5), book chapters (36), conference papers (53), and an erratum (1). This diversity in document types reflects the interdisciplinary nature of research on AI in HRM, encompassing contributions from academic journals, books, and conference proceedings.

The document analysis offers a thorough summary of academic research on AI in HRM, demonstrating the depth and breadth of scholarly investigation into this quickly developing topic. The results of this dataset analysis provide insightful information on study themes, citation trends, and collaboration patterns that can guide future investigations and deepen our understanding of how AI is integrated into HRM practices.

Table 1: *Document Analysis*

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2014:2023
Sources like books, journals etc	96
Documents found	132
Annual Growth Rate Percentage	59.81
Document Average Age	2.03
Average citations per Document	5.644
References Found	4258
DOCUMENT CONTENTS	
Keywords Plus (ID)	606
Author's Keywords (DE)	362
AUTHORS	
Authors	376
Authors of single-authored documents	12

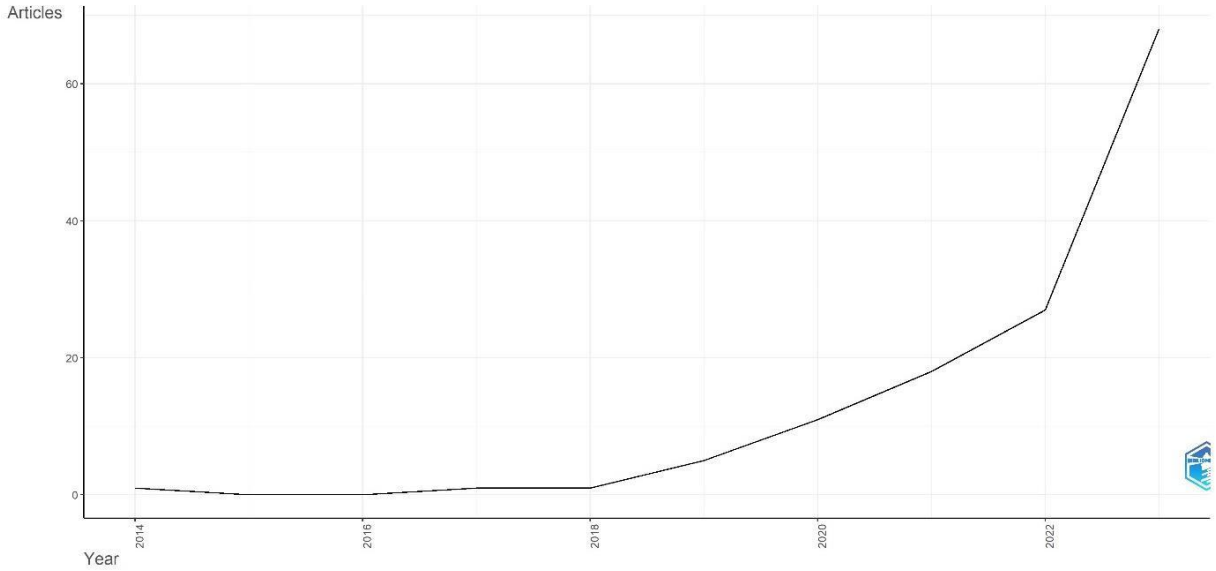
AUTHORS COLLABORATION	
Single-authored documents	12
Co-Authors per Documents	3.28
International co-authorships Percentage	21.21
DOCUMENT TYPES	
Articles Found	37
Books Found	5
Book chapters Found	36
Conference paper Found	53
Erratum	1

Source: Author's Compilation

Production Analysis

From Figure 1, it's evident that there is a notable increase in article production starting from 2019, with a sharp rise observed in 2020 and further exponential growth in 2021 and 2022. The year 2023 shows a significant continuation of this trend, with the highest number of articles produced compared to the previous years.

Figure 1: *Production Analysis*



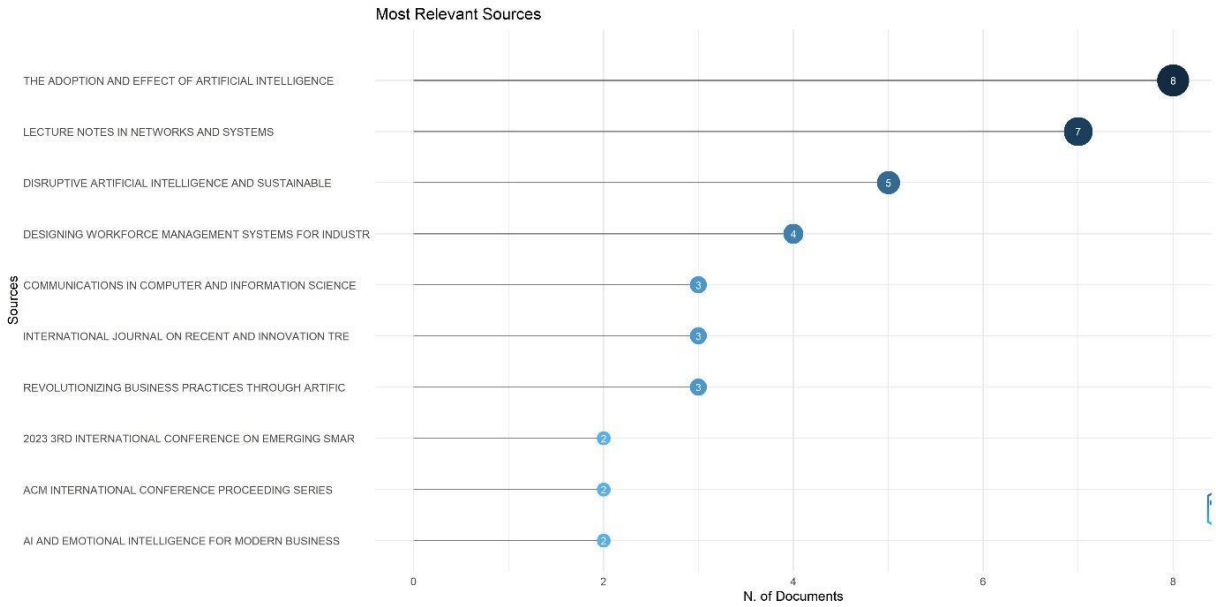
Source: Author's Compilation

According to this production analysis, there is a rising body of study and interest in the area of artificial intelligence (AI) in human resource management (HRM), with scholars concentrating more on investigating the different facets and uses of AI in HRM practices. The trend of more articles being produced emphasizes how important AI is to the transformation of HRM and emphasizes the need for ongoing study and investigation into this developing field.

Most Relevant Source

From the Figure 2 analysis, it's evident that "THE ADOPTION AND EFFECT OF ARTIFICIAL INTELLIGENCE ON HUMAN RESOURCES MANAGEMENT, PART A" and "LECTURE NOTES IN NETWORKS AND SYSTEMS" are the two most relevant sources, with the highest number of articles contributed to the literature on AI in HRM. These sources likely contain significant insights and research findings on the topic and are therefore considered highly relevant within the field.

Figure 2: *Most Relevant Source*

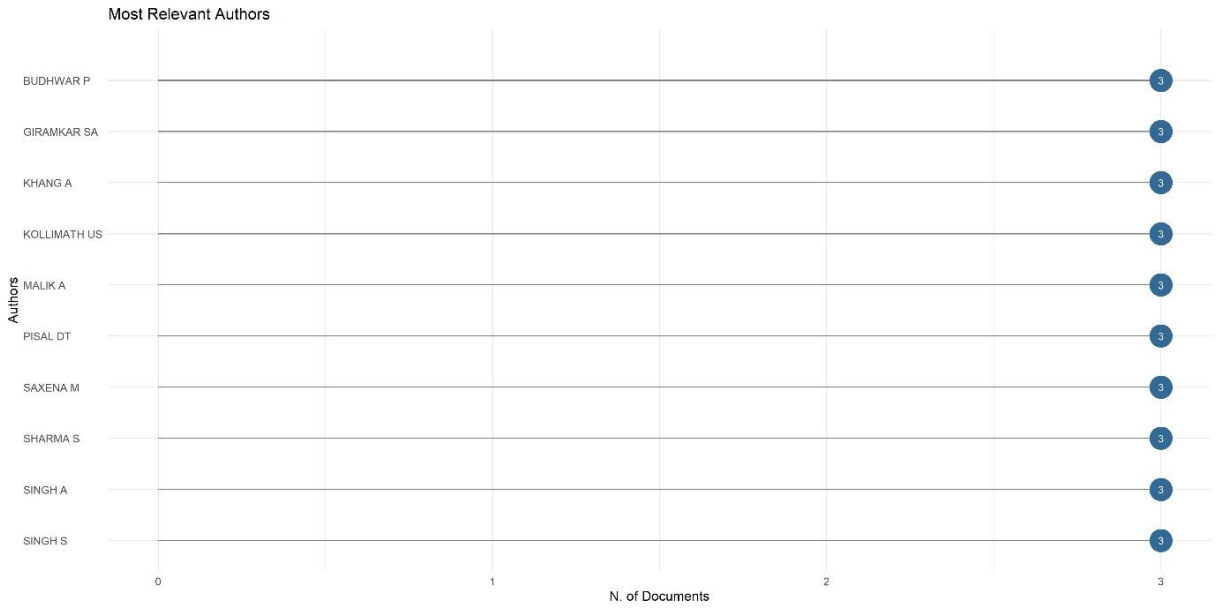


Source: Author's Compilation

Most Relevant Author

Several writers have significantly contributed to the literature on AI in HRM, according to the most pertinent author analysis, which is based on Figure 3. Among these authors, Sharma S stands out as the most prolific, with an article fractionalized value of 1.08, indicating that they have contributed slightly more than one article on average. Other noteworthy authors include Khang A, Saxena M, and Singh A, each with articles fractionalized values exceeding 1, suggesting they have also contributed significantly to the field.

Figure 3: *Most Relevant Author*



Source: Author's Compilation

Interestingly, several authors have contributed to three articles each, including Budhwar P, Giramkar SA, Kollimath US, Malik A, Pisal DT, Singh S, and Singh A. Although they have the same number of articles, their fractionalized values vary, indicating differences in their relative contributions to each article.

This analysis highlights the collective efforts of these authors in advancing the understanding of AI in HRM. Their contributions have likely shaped the discourse, influenced research directions, and contributed to the development of practical applications within the field. Further exploration of their individual contributions and research focus areas could provide deeper insights into their impact on literature and their roles in shaping the future of AI in HRM.

Word Cloud Analysis

Figure 4 reveals several key terms and concepts related to artificial intelligence (AI) in human resource management (HRM). At the forefront is the term "artificial intelligence," which appears most frequently, underscoring its central importance in the field. Alongside AI, terms such as "human resource management" and "human resources management" feature prominently, highlighting the integration of AI technologies in managing human resources within organizations. Furthermore, advanced AI techniques like "deep learning" and "machine learning" are significant, indicating their role in data analysis, pattern recognition, and decision-making processes within HRM. Terms like "personnel" and "decision making" suggest a focus on personnel management and decision support systems powered by AI.

Figure 4: *Word Cloud*

Source: Author's Compilation

Additionally, terms like "resource allocation" and "random forests" point to the application of AI algorithms in optimizing resource allocation and predictive modelling. However, the inclusion of "natural resources management" may represent an outlier or a closely related field, potentially indicating some noise in the dataset. Overall, the word cloud offers a visually appealing snapshot of the diverse range of topics and technologies encompassed within the realm of AI in HRM.

Thematic Map

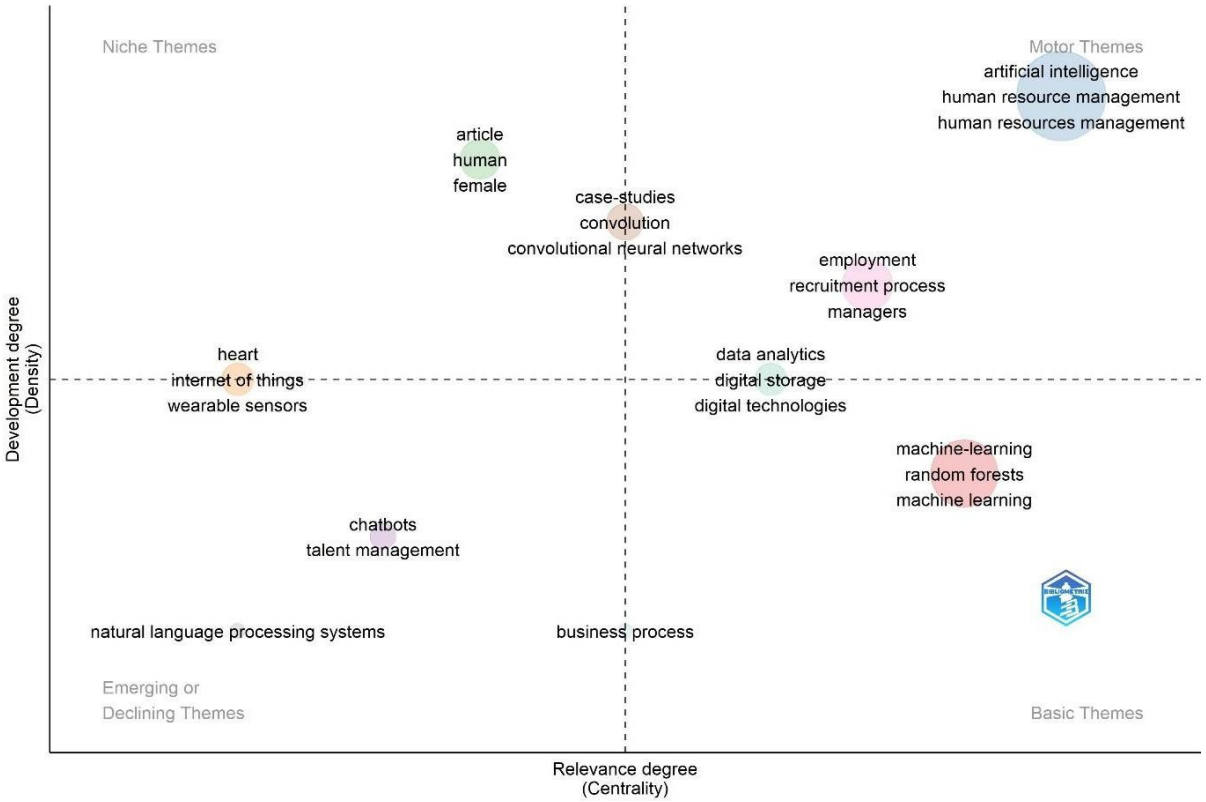
Figure 5 portrays the thematic map analysis which involves clustering words based on their occurrences and centrality measures to identify themes or topics within the dataset. Here's the thematic map analysis based on the provided data:

i. Cluster: Machine Learning: Words like "random forests," "machine learning," "decision trees," "forecasting," "learning systems," "classification (of information)," and "data science" are clustered together under the theme of machine learning. These terms indicate a focus on various machine learning techniques and methodologies applied in HRM contexts, such as predictive modelling, classification, and data analysis.

ii. Cluster: Employee Attrition and Turnover: Terms like "employee attrition" and "employee turnover" form a separate cluster, suggesting a distinct theme related to employee retention and turnover prediction using machine learning approaches. These terms likely represent research efforts aimed at identifying factors contributing to employee attrition and turnover and developing predictive models to mitigate these issues within organizations.

The thematic map analysis highlights two main themes within the dataset: machine learning techniques applied in HRM and the prediction and management of employee attrition and turnover. These themes provide insights into the research focus areas and methodologies employed in studying AI in HRM, indicating a strong emphasis on leveraging machine learning for predictive analytics and decision support in human resource management practices.

Figure 5: *Thematic Map*



Source: Author's Compilation

Countries' Collaboration World Map

Figure 6 involves visualizing collaborations between countries based on the frequency of interactions. Here's the analysis based on the data provided:

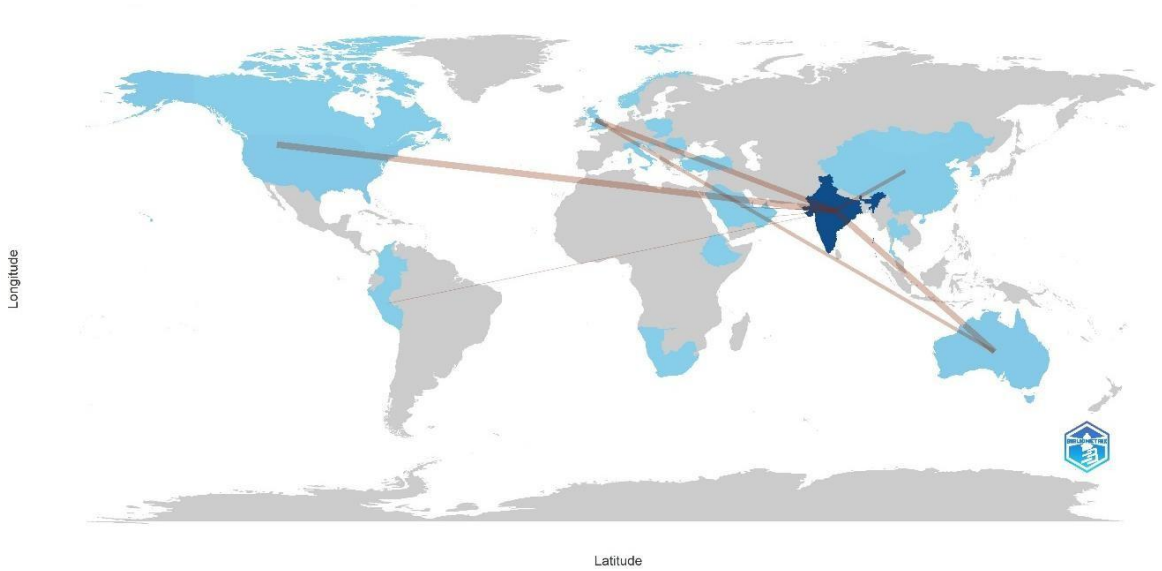
i. India-Australia Collaboration (5): India and Australia have collaborated five times, indicating a significant level of cooperation between the two countries in research or other endeavours related to the dataset's topic.

ii. India-United Kingdom Collaboration (3): India and the United Kingdom have collaborated three times, suggesting another notable partnership in research or collaborative efforts.

iii. India-China Collaboration (3): India and China also share three collaborations, reflecting a significant level of interaction between two of the world's largest economies.

iv. Other Collaborations: There are individual collaborations between India and other countries like Canada, Colombia, Croatia, Ethiopia, Italy, and Korea. While these collaborations are less frequent, they still indicate diverse international partnerships in the dataset.

Figure 6: *Countries' Collaboration World Map*



Source: Author's Compilation

The country collaboration map analysis highlights the prominent collaborations between India and several other countries, particularly Australia, the United Kingdom, and China. The aforementioned collaborations are expected to facilitate the transfer of knowledge, resources, and skills about the subject matter of the dataset, hence promoting global cooperation and scientific progress.

LIMITATIONS OF THE STUDY

Even if the study adds insightful knowledge about AI in HRM, it's critical to recognize some limitations that could affect how the results are interpreted and applied generally.

Firstly, the study's reliance on bibliometric analysis imposes inherent constraints, particularly in terms of the reliance on quantitative metrics and the potential oversight of context-specific and qualitative nuances. By focusing primarily on publications indexed in Scopus, the study may have inadvertently excluded relevant literature from other databases or non-indexed sources, introducing selection bias into the dataset.

Secondly, the accuracy and accessibility of the data utilized in the analysis, including author affiliations and keyword classifications, may have posed challenges. Inconsistencies or inaccuracies in data sources could have influenced the results and interpretations of the study, undermining the reliability of the findings.

Furthermore, because the study focuses on AI in HRM within a particular geographic location and timeframe, its applicability to other contexts or timeframes may be limited. Changes in organizational, technological, and cultural contexts may affect how applicable and generalizable the study's findings are outside of its initial purview.

Despite these limitations, it is important to recognize the value of the study in contributing to the expanding body of research on AI in HRM. By providing insightful information and laying the groundwork for continued exploration and innovation in this dynamic field, the study catalyzes further scholarly inquiry and practical advancements in AI-enabled HRM practices. Moving forward, researchers and practitioners should exercise caution when interpreting the study's findings and strive to address the identified limitations in future research endeavours.

FURTHER SCOPE

Even though the current research has shed light on how AI is integrated into HRM, there are still many areas that might use more research to improve our knowledge and implementation of AI-driven HRM practices. The following sections highlight possible study topics that should be investigated in the future:

i. Specific Applications of AI in HRM: Subsequent investigations may explore more deeply certain uses of AI in HRM, including talent acquisition, performance management, workforce optimization, and employee management. Researchers can gain sophisticated insights into the efficacy, difficulties, and best practices related to AI adoption in HRM processes by looking more closely at these domains.

ii. Multidisciplinary Research: There is a growing need for multidisciplinary research that explores the intersection

of AI with other cutting-edge technologies such as blockchain, the Internet of Things (IoT), and augmented reality (AR). Investigating how these technologies synergize with AI in transforming HRM procedures can provide fresh perspectives and innovative solutions to complex HR challenges.

iii. Qualitative Research: Supplementing bibliometric analysis with qualitative research methods can offer more nuanced insights into the impact of AI implementation on employee experiences, organizational culture, and ethical considerations. Qualitative studies can capture the lived experiences of employees and HR practitioners, shedding light on the complexities and nuances of AI-enabled HRM practices.

iv. Longitudinal Studies: Longitudinal studies tracking the development of AI in HRM over time can elucidate evolving trends, emerging obstacles, and future possibilities in this rapidly evolving field. By monitoring changes in AI adoption, implementation strategies, and outcomes over time, researchers can provide valuable guidance to policymakers and practitioners navigating the dynamic landscape of AI-driven HRM.

Our understanding of AI in HRM and its ability to support strategic decision-making in businesses should be furthered by future research projects that adopt longitudinal perspectives, combine qualitative methodologies, embrace multidisciplinary approaches, and concentrate on particular AI applications. Scholars can further understand and practice AI-enabled HRM by tackling these research gaps, which will eventually improve company effectiveness, employee well-being, and social impact.

CONCLUSION

The dynamic interaction of artificial intelligence (AI) and human resource management (HRM) has been thoroughly bibliometrically analyzed in this study, which has yielded insightful information about how organizational practices are changing. The study has provided a clear picture of the complex interaction between AI and HRM by illuminating important themes, significant authors, thematic clusters, and collaborative networks through a thorough assessment of academic literature.

The most notable finding of the analysis is the remarkable surge in research output over the past decade, underscoring the increasing significance and relevance of AI within the HRM domain. This surge reflects a growing interest and engagement in leveraging AI technologies to enhance HRM practices and address contemporary organizational challenges. Furthermore, the study has identified recurring patterns in the application of decision support systems, predictive modelling, and machine learning methods across diverse HRM contexts, highlighting the versatility and adaptability of AI-driven solutions.

Moreover, the collaborative networks revealed in the analysis underscore the global nature of research in this field, with alliances spanning continents and countries. Notable collaborations between research institutions in Australia, China, India, the United Kingdom, and beyond demonstrate concerted efforts to expand knowledge, foster innovation, and drive advancements in AI-enabled HRM practices on an international scale.

This work adds to our knowledge of the revolutionary possibilities of AI in HRM and emphasizes the significance of ongoing investigation and cooperation in this quickly developing area. Through the identification of nascent trends, cultivation of interdisciplinary collaborations, and adoption of inventive approaches, scholars and professionals can effectively leverage artificial intelligence (AI) to transform human resource management (HRM) systems, maximize organizational efficacy, and augment employee experiences within the digital era. Businesses must be mindful of ethical considerations, transparency, and stakeholder engagement when navigating the complexity of AI adoption. This will help to guarantee that AI-driven HRM practices support inclusiveness, fairness, and equity in the workplace.

ETHICAL DECLARATION

Conflict of interest: The authors declare that there is no conflict of interest regarding the publication of this paper**.**
Financing: This research received no external funding.
Peer review: Double anonymous peer review.

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