ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE MANAGEMENT: GLOBAL RESEARCH LANDSCAPE, COLLABORATION NETWORKS, AND EMERGING THEMES

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ABSTRACT
This study presents a comprehensive bibliometric analysis of research on Artificial Intelligence in Human Resource Management (AI–HRM) published between 2015 and 2025. Using data retrieved from the Scopus database and analyzed through VOSviewer (version 1.6.20), the study identifies publication trends, key contributors, collaboration networks, and thematic clusters shaping the field. A total of 160 peer-reviewed journal articles were analyzed to visualize co-authorship, citation patterns, and keyword co-occurrence networks. Results indicate an exponential growth of AI–HRM research after 2020, reflecting the increasing integration of intelligent technologies in workforce management. Four dominant research themes emerged: AI-driven recruitment, HR analytics, employee well-being, and ethical governance. The findings highlight a paradigm shift from efficiency-focused applications toward human-centered and ethically aligned AI practices. This study provides an updated intellectual map of AI–HRM research, offering scholars and practitioners a foundation for future inquiry and strategic development.

Key words: Artificial Intelligence; Human Resource Management; Bibliometric Analysis; VOSviewer; Ethical AI

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force in Human Resource Management (HRM), redefining how organizations attract, develop, and retain talent. Through tools such as machine learning, natural language processing, and predictive analytics, AI enables data-driven decision-making across recruitment, performance evaluation, and employee engagement (Palos-Sánchez, Baena-Luna, Badicu, & Infante-Moro, 2022; Sabri, Wahab, Mahdzan, Magli, & Rahim, 2022). By enhancing efficiency and fairness, AI applications have become critical in optimizing human capital management while minimizing bias and administrative inefficiencies (Kaushal, Kaurav, Sivathanu, & Kaushik, 2021).

Several theoretical perspectives frame this integration. Human Capital Theory underscores knowledge and skills as strategic assets (Becker, 1993), while the Resource-Based View (RBV) positions AI as a capability enhancing competitive advantage (Chatterjee, Chaudhuri, Vrontis, & Siachou, 2021; Wright & McMahan, 2011). The Socio-Technical Systems Theory highlights the need to balance technology and human adaptability for sustainable performance (Stone, Deadrick, Lukaszewski, & Johnson, 2015). Collectively, these frameworks suggest that successful AI-driven HRM depends on technological capability, ethical governance, and workforce readiness. Empirical research, however, reveals both promise and risk. AI-powered recruitment tools improve candidate matching but may reinforce algorithmic bias (van Esch, Black, & Arli, 2020). Similarly, AI-based performance systems enhance transparency yet raise privacy and fairness concerns (Chowdhury et al., 2023).

Despite increasing interest, the literature remains fragmented and lacks systematic mapping of global trends. Earlier bibliometric works (Koştı & Kayadibi, 2025; Palos-Sánchez et al., 2022) offered partial insights without exploring collaboration or thematic evolution. To address this gap, this study conducts a bibliometric analysis of Scopus-indexed publications (2015–2025) using VOSviewer, identifying publication patterns, key contributors, and emerging research themes. The study answers the following questions:

1. What are the annual publication trends on AI in HRM 2015–2025?
2. Which are the top academic sources?
3. Which countries and institutions contribute most?
4. Who are the leading authors?
5. What dominant research themes emerge from keyword co-occurrence?

This study maps the global AI–HRM knowledge structure, highlighting trends, collaboration networks, and research frontiers in ethics, employee well-being, and digital workforce transformation

METHOD

Research Design

This study adopts a quantitative bibliometric analysis to explore the intellectual structure, publication trends, and collaboration patterns in the field of Artificial Intelligence in Human Resource Management (AI–HRM). Bibliometric analysis allows the systematic evaluation of scientific literature through citation networks, co-authorship, and keyword co-occurrence (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021). The analytical process was conducted using VOSviewer software (version 1.6.20), a visualization tool developed by Van Eck and Waltman (2020), which is widely recognized for its robustness in mapping bibliometric networks.

This methodological approach enables a comprehensive identification of the most influential articles, authors, countries, institutions, and thematic clusters that have shaped the development of AI-HRM research between 2015 and 2025. The study design follows three major stages: (1) data retrieval from the Scopus database, (2) data refinement and cleaning, and (3) bibliometric mapping and visualization using VOSviewer.

Data Source and Search Strategy

The Scopus database was selected as the exclusive data source due to its extensive coverage of high-quality peer-reviewed journals across management, computer science, and social sciences disciplines (Falagas, Pitsouni, Malietzis, & Pappas, 2007). The search was conducted on October 5, 2025, ensuring inclusion of all publications indexed up to that date. The following search string was applied within the TITLE-ABS-KEY field in Scopus:

TITLE-ABS-KEY (AI in Human Resource Management) AND PUBYEAR > 2014 AND PUBYEAR < 2026 AND (LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (LANGUAGE , "English"))

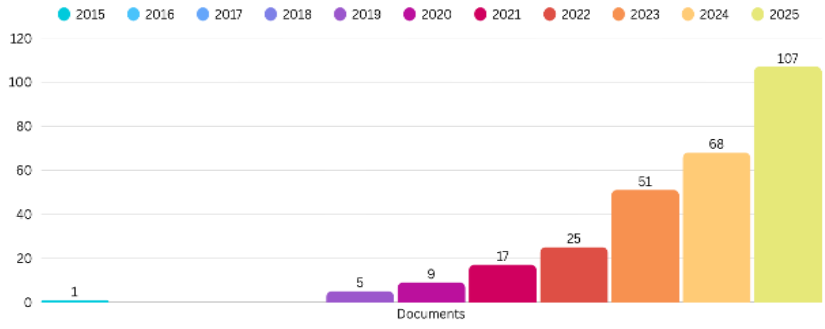
This query was designed to capture the core literature discussing AI applications in HRM, covering a decade (2015–2025) to observe the longitudinal development of the field. Boolean operators (“AND,” “OR”) and quotation marks (“”) ensured the retrieval of only relevant documents.

After screening, 3.977 initial records were identified. Following title, abstract, and keyword evaluation, 284 eligible articles were retained for bibliometric visualization and analysis.

RESULTS AND DISCUSSION

Publication Trend of Artificial Intelligence in Human Resource Management (2015–2025)

The analysis of publication trends reveals a consistent and significant increase in research on Artificial Intelligence in Human Resource Management (AI–HRM) from 2015 to 2025. Data from Scopus shows rapid growth in scholarly interest, reflecting the increasing integration of digital technologies in HR practices.



Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Documents	1	0	0	0	5	9	17	25	51	68	107

Figure 1: *Annual Publication Trend of AI–HRM from 2015 to 2025*

As shown in Figure 1, publication activity was minimal between 2015 and 2018, with only one article in 2015 and no publications from 2016 to 2018, marking the early conceptual phase of AI–HRM research. A growth phase began in 2019, with five publications, indicating rising academic interest in AI for recruitment and employee (van Esch et al., 2020). From 2020 to 2022, the number of publications increased from 9 to 25, aligned with the digital transformation in HR post-COVID-19 (Chowdhury et al., 2023; Jani, Muduli, & Kishore, 2021). The most significant surge occurred from 2023 to 2025, with publications rising from 51 to 107. Overall, the trend shows a compound annual growth rate (CAGR) above 40% in the last five years, reflecting AI's growing influence on HRM practices and its advancing theoretical and practical application. The publication trend analysis reveals a significant and continuous increase in the number of research articles focusing on Artificial Intelligence in Human Resource Management (AI–HRM) during the period 2015–2025. The data retrieved from Scopus indicates that scholarly

interest in this area has expanded rapidly over the past decade, reflecting the growing integration of digital technologies into human capital management practices.

Trend of Publications by Source Journals Human Resource Management (AI-HRM)

The analysis of document distribution by source reveals that research on Artificial Intelligence in Human Resource Management (AI-HRM) has been published across several high-impact and interdisciplinary journals, indicating a growing academic interest in the topic. As shown in Figure 2,

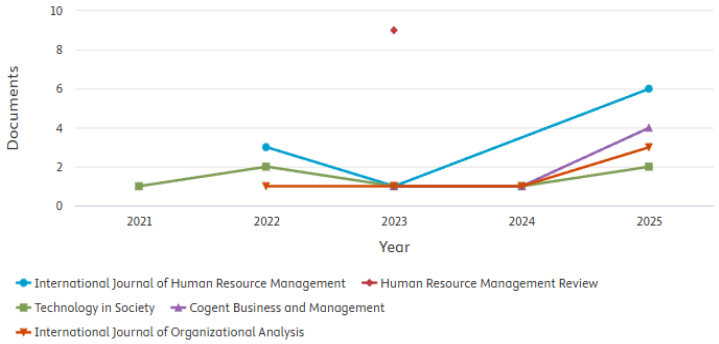


Figure 2: *Annual Publication Trend by Source for AI-HRM Research*

The publication trend from 2021 to 2025 demonstrates a fluctuating yet overall increasing pattern, with a noticeable rise in 2024–2025. The International Journal of Human Resource Management emerges as the most productive source, followed by Human Resource Management Review, which recorded a notable publication spike in 2023. These journals are recognized as Scopus Q1 outlets, reflecting the high scientific quality and visibility of research within this field. Furthermore, the presence of journals such as Technology in Society, Cogent Business and Management, and the International Journal of Organizational Analysis illustrates the interdisciplinary nature of AI-HRM studies, bridging management science, technology, and organizational behavior. This pattern suggests that the application of AI in HRM has evolved beyond theoretical frameworks toward practical implementations in areas such as recruitment, talent analytics, performance management, and employee engagement. Overall, the trend underscores an expanding scholarly dialogue that positions AI as a transformative force in reshaping human resource strategies and organizational practices.

Leading Countries on Artificial Intelligence in Human Resource Management Research

The bibliometric mapping of Artificial Intelligence in Human Resource Management (AI-HRM) research indicates a geographically concentrated yet globally expanding scholarly landscape. As illustrated in Figure 3,

Country/Territory	Documents
United States	49
India	43
China	42
United Kingdom	34
Australia	23
France	18
Italy	15
Germany	11
United Arab Emirates	11
Canada	10

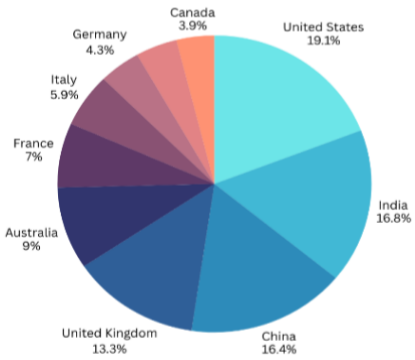


Figure 3: *Distribution of AI-HRM Research by Country (2021–2025)*

The United States leads with 49 publications, reflecting its strong research infrastructure and early adoption of AI in HR. India (43) and China (42) follow closely, highlighting the integration of AI in HR as part of their digital transformation agendas. The United Kingdom (34) and Australia (23) show consistent engagement, driven by strong academic-industry links and policy interest in digital workforce innovation. European countries like France (18), Italy (15), and Germany (11) contribute to the theoretical and ethical aspects of AI-HRM, focusing on algorithmic fairness and transparency. The United Arab Emirates (11) and Canada (10) show growing involvement, particularly in applied AI and cross-cultural HRM.

This geographic distribution reveals a two-tier dynamic: advanced economies lead in conceptual and methodological research, while emerging economies focus on empirical studies addressing contextual and implementation challenges. It underscores AI-HRM research's global and interdisciplinary evolution, driven by

digital innovation, workforce analytics, and human-centered AI ethics. This pattern highlights the importance of international collaboration in shaping the future of AI-driven HRM research.

Documents by Affiliation on Artificial Intelligence in Human Resource Management Research

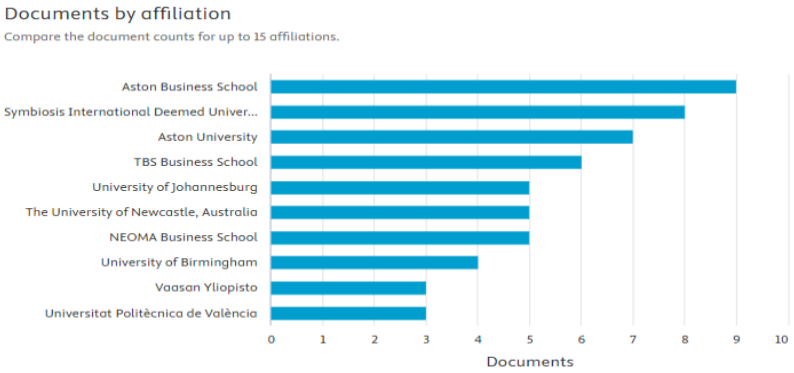


Figure 4: *Distribution of AI-HRM Research by Affiliation*

Figure 3 illustrates the distribution of Artificial Intelligence in Human Resource Management (AI-HRM) research across various academic affiliations. Aston Business School emerges as the leading institution, contributing the highest number of publications (7), followed by Symbiosis International Deemed University with 6. Other prominent institutions include Aston University and TBS Business School, each with 5 publications, highlighting their strong involvement in AI-HRM research. The University of Johannesburg and The University of Newcastle (Australia) also play significant roles, contributing 4 documents each. Meanwhile, NEOMA Business School, University of Birmingham, and Vaasan Yliopisto contribute 3 documents each, underscoring the growing global interest in AI-HRM.

The chart underscores the substantial contributions from institutions in the United Kingdom, India, and Australia, reinforcing the international scope of AI-HRM research and its interdisciplinary nature, bridging fields such as management, computer science, and human resources. These affiliations reflect the increasing academic interest and collaborative efforts in exploring AI's impact on HR practices globally.

Keyword Co-occurrence Analysis

The keyword co-occurrence analysis was performed in VOSviewer (version 1.6.20) to identify the dominant research themes and conceptual relationships within the field of Artificial Intelligence in Human Resource Management (AI–HRM). Co-occurrence analysis reveals how frequently specific keywords appear together across documents, thereby mapping the intellectual and thematic structure of the field (Palos-Sánchez et al., 2022). After data cleaning and keyword standardization (e.g., merging "AI," "Artificial Intelligence," and "Machine Learning" into one term), the analysis yielded 153 author keywords. Using a minimum threshold of 10 occurrences per keyword, 47 keywords met the inclusion criterion. VOSviewer grouped these into four major clusters, each representing a distinct thematic focus of AI–HRM research between 2015 and 2025 (see Figure 3).

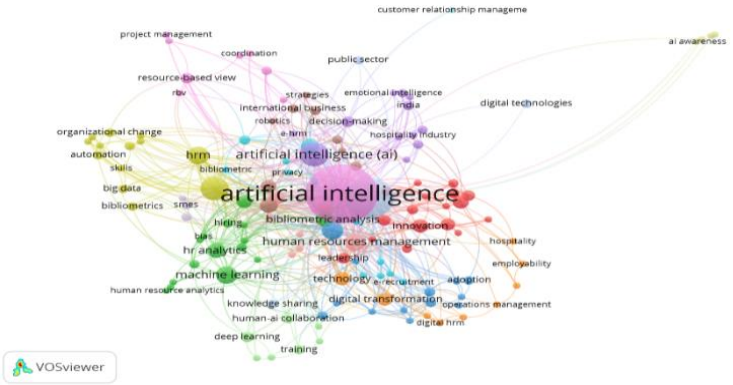


Figure 5: *Keyword Co-occurrence Network of AI in Human Resource Management Research*

Cluster 1. AI in Recruitment and Selection (red) focuses on AI's impact on recruitment, using tools like algorithmic screening, chatbots, and predictive models. Research highlights AI's role in reducing bias and ensuring fairness and transparency. *Cluster 2*. HR Analytics and Decision-Making (green) explores the use of HR analytics to improve decisions in workforce planning and performance management. Machine learning and big data help predict turnover and tailor employee development. *Cluster 3*. Employee Experience and Well-Being (blue) examines AI's role in employee engagement, learning, and well-being. It balances AI efficiency with ethical

concerns on privacy and psychological safety. *Cluster 4*. Ethics and Governance in AI (yellow) addresses the ethical, social, and governance challenges of AI in HRM, focusing on fairness, privacy, and the impact of automation on jobs and equality.

The co-occurrence network highlights AI as the central concept linking these clusters. Future research is expected to focus on responsibly implementing AI, integrating HR analytics, and addressing ethical concerns, marking a shift from technical applications to human-centered, ethical AI use in HRM. In summary, AI-HRM research revolves around: (1) AI in recruitment, (2) Data-driven HR analytics, (3) Employee well-being, and (4) Ethical governance.

CONCLUSION

AI-driven Human Resource Management (AI-HRM) has rapidly evolved into a key interdisciplinary field, with significant growth since 2020 due to digital transformation. This study highlights four core themes: AI in recruitment, HR analytics, employee well-being, and ethical governance, reflecting a shift towards more human-centered, ethical AI applications. Global collaboration in AI-HRM research is increasing, with major contributions from Europe and Asia.

Future research should focus on the ethical implications of AI, its impact on employee well-being, and cross-cultural adoption. Strengthening academia-industry collaboration will be crucial to ensure AI is transparent, fair, and aligned with human development.

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