“Artificial intelligence in human resource management: A bibliometric analysis and literature mapping (2015–2025)”

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ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE MANAGEMENT: A BIBLIOMETRIC ANALYSIS AND LITERATURE MAPPING (2015–2025)

Abstract

The integration of artificial intelligence (AI) has profoundly transformed human resource management (HRM) from an administrative function into a strategic decision-making process, creating a critical need to balance algorithmic effectiveness with operational challenges. The purpose of this study is to explore the evolving integration of artificial intelligence within human resource management. This paper utilizes a bibliometric analysis using PRISMA reporting flow guidelines, analyzing data retrieved from the Scopus database for the period from 2015 to 2025. The results reveal an exponential expansion of scientific research over the decade. Out of an initial set of 2,949 publications, 622 relevant documents met the inclusion criteria and were analyzed using VOSviewer. Annual publications grew from nine articles in 2015 to 218 articles in 2025. The geographical distribution shows that India leads the field with 116 publications, followed by China (114) and the United States (98). Furthermore, the thematic mapping identifies nine distinct clusters, with AI and human resource management standing out as the primary domains experiencing transformation. The findings confirm that the field has become a consolidated, dynamic discipline, with strategic implications for organizations seeking to align technological efficiency with organizational justice, ethical considerations, and employee well-being.

Keywords AI, VOSviewer, bibliometric analysis, HRM

JEL Classification O33, M15, M54, C88

INTRODUCTION

The integration of artificial intelligence (AI) in human resource management (HRM) shifts the function from administrative support to decision-making (Stone et al., 2024; Tairov et al., 2024). AI technologies transform global recruitment (Khandelwal & Upadhyay, 2021). Furthermore, AI acts as a non-human strategic actor that reshapes workplace practices and power dynamics (Tairov et al., 2024). This evolution turns AI systems into active participants in hiring and training processes rather than passive tools (Alaghbari et al., 2024). However, the increasing pace at which these technologies are being deployed has far exceeded the development in theoretical and empirical understanding of these technologies. Organizations now face a key challenge: balancing algorithmic effectiveness with ethical considerations, as issues of transparency, fairness, accountability, and employee data sovereignty have moved from the background to center stage (Madancian & Taherdoost, 2024). Conflict between algorithmic efficiency and organizational justice is now more pronounced. These tensions have evolved into operational challenges with direct implications for employee well-being (Dwivedi et al., 2021; Tambe et al., 2019).

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Furthermore, there is an increased reliance on digital HR systems. For instance, in terms of recruitment, AI technologies have progressed from keyword matching to detailed predictive technologies, capable of detecting potential skills and cultural fit. Although this promises higher precision, these technologies also risk perpetuating historical biases embedded in the training data (Tay et al., 2024; Ore & Sposato, 2022). Therefore, to develop the field, it is important to go beyond descriptive research and investigate the implications of AI adoption on organizational dynamics.

Although research on the adoption of AI in HR management is gaining momentum, the field is highly fragmented. This study focuses on literature published over the past ten years (2015–2025), a window selected to capture the most recent decade of scholarship, a period marked by accelerating technological innovation and the rapid maturation of AI tools applied to HR contexts. Scopus was selected as the sole database for this review. While Web of Science is a viable alternative, Scopus was chosen for its broader, more consistent indexing of journals across the social sciences and management disciplines, making it a suitable single-database source for capturing the interdisciplinary nature of AI-HRM research.

Previous studies on the topic are often outdated or based on individual technology research designs. Therefore, they do not offer a comprehensive quantitative review of the development in this field. Consequently, a major scientific problem emerges from the tension between the accelerated transformation of HRM and the lack of a structured, comprehensive conceptual framework to evaluate these changes. While digital tools are deployed to optimize recruitment and training and other processes of HRM, the scientific literature lacks a unified mapping of how these disparate technologies interact with fundamental human resource operations.

1. LITERATURE REVIEW

1.1. Artificial intelligence in human resources management

Artificial intelligence (AI) is a potentially transformative force highly embedded in society (Dickson & Nusair, 2010), acting like a human brain to deliver full productivity by utilizing human knowledge to improve effectiveness across all enterprises (Niehueser & Boak, 2020). As an innovation that reshapes organizational decision-making and management practices (Jarrahi, 2018), AI empowers operations by using and transforming intelligent data (Rab-Kettler & Lehnervp, 2019). These information-driven technologies influence HR business organizations, leading them to reshape their corporate culture to meet new demands (Martínez-Miranda & Aldea, 2005). In this context, recruiting the right person from the talent pool is a major function, as organizations must select, attract, and manage talented resources (Van Esch et al., 2020). AI applications support this process through human-computer collaboration. For instance, artificial intelligence analyzes applicants' visual presentations to assess whether their personality is a good fit for the position, as well as to determine the trustworthiness of their answers (Manyika et al., 2017; Van Esch & Black, 2019), or to recognize individual face pictures and videos (Masud et al., 2020). Furthermore, artificial intelligence now provides a path to process the information of talented employees in an effective manner, at a much lower cost than in previous periods (Gupta et al., 2018). These HRM practices can vary across regions, as Dibben et al. (2017) observed through a comparison between Mozambique and Portugal, and as Ayentimi et al. (2018) highlighted regarding underdeveloped regulatory institutions and low HRM professionalization. Beyond HRM, AI-centric technologies are able to monitor and control processes in real time, offering significant efficiencies over manual processes (Jain & Mosier, 1992; Zhong et al., 2017), with studies analyzing AI's potential to replace humans via intelligent automation in manufacturing, supply chain, production, and the construction industry (Kusiak, 1987; Muhuri et al., 2019; Parveen, 2018). However, society is generally yet to fully grasp the broader economic, cultural, ethical, and sustainability considerations associated with AI (Duan et al., 2019; Pappas et al., 2018). Moreover, AI experts predict that AI systems will likely reach overall human ability by 2075, with some arguing that further

progress toward superintelligence may harm humanity (Müller & Bostrom, 2016). AI-driven HR practices may provoke negative employee reactions, diminish job satisfaction, and generate perceived unfairness when systems lack transparency (Tambe et al., 2019). These risks are exacerbated by the complexity of human judgment, which algorithms often struggle to capture, and by the reliance on unrepresentative datasets that can perpetuate historical biases. Consequently, scholars argue that these limitations must be critically assessed to ensure the responsible use of AI in recruitment.

Analysis of the research studies conducted during the previous 20 years shows that most of the research focuses on the application of AI in the subfunctions of HRM, such as recruiting, learning and development, or talent management. However, there is a lack of research on the relationship between AI and HRM as a whole. This lack makes it difficult to develop a comprehensive understanding of the application of AI in HRM.

Among studies that address AI and recruitment specifically, research shows that applying AI in recruitment has led to greater automation and modernization, particularly in candidate sourcing and decision-making (Chen, 2023; Madanchian, 2024). By applying AI algorithms, organizations aim to speed up recruitment, expand their databases, and improve selection (Aydın & Turan, 2023). This trend was further enhanced through the COVID-19 pandemic, which led to a paradigm shift in the assessment of candidates through remote means. Technologies such as natural language processing have significantly impacted the screening of resumes, which was previously a time-consuming process for human resources (Aydın & Turan, 2023; Nawaz & Gomes, 2019). Artificial intelligence systems are now involved in many aspects of the hiring process, such as applicant tracking systems, automated scheduling systems, and candidate personality tests (Nawaz, 2020; Allal-Chérif et al., 2021). The benefits of artificial intelligence systems in business operations are quantified by a reduction in time-to-hire from 10 weeks to 2 weeks, increasing input efficiency (cost reduction) and output efficiency (reduced candidate drop-off) (Kshetri, 2020). However, the literature emphasizes that these benefits are not without risk. While they enhance objectivity by minimizing subjective criteria like nepotism and favoritism, AI applications in recruitment introduce new vulnerabilities, including cybersecurity challenges, ethical dilemmas, and high adoption costs (Ore & Sposato, 2022; Al-Alawi et al., 2021). Notably, most of these studies have all centered narrowly on the use of AI in recruitment rather than its use across the entire range of HRM functions. As a result, they provide little information on how AI influences other HRM procedures.

In addition to recruitment, artificial intelligence has also played an increasingly prominent role in learning and development (L&D), another core sub-function of HRM. The influence of artificial intelligence (AI) on learning and development (L&D) is also significant, as it has redefined training paradigms. It is observed that AI capabilities have helped in creating customized training curricula, assessing skills, and promoting training courses, resulting in increased relevance (Jia et al., 2018). Managers can analyze training performance and provide real-time feedback through analytics, increasing training efficiency (Unni et al., 2023). Additionally, AI-based tutors can increase training efficiency through end-to-end support, resulting in increased lifelong learning and engagement through interactive sessions (Gaur et al., 2021). Similarly to the recruitment literature, the literature described above remains narrowly constrained to AI use within one specific HRM sub-function: L&D in this instance. These studies offer valuable insight into the improvements that the use of AI allows to be made in training customization, feedback, and learner engagement. However, they fail to acknowledge the interrelations of these improvements with other HRM subfunctions, such as recruitment, performance management, and talent retention. This narrow focus on one particular sub-function validates the argument made earlier of a limited holistic approach to AI within HRM literature.

In addition, some studies have carried out bibliometric analyses on the subject matter. However, none of them takes into account the latest works published, especially those published in the last two years. This applies in particular to Kaushal et al. (2023) and Rana and Kumar (2026), whose analyses cover only up to 2024. Moreover, one

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can observe the same pattern in the analysis by Koştı and Kayadibi (2025) and Usman et al. (2026), which did not cover the latest scientific outputs. The present study stands out as one of the few contributions to offer a bibliometric analysis that fully includes the year 2025. This inclusion becomes necessary since 2025 was characterized by an unprecedented number of publications connecting artificial intelligence with human resource management, thus corresponding to the fast-developing dynamics characteristic of this field in the last decade. However, 2026 was omitted because the year is still in progress, and many papers and projects are still being written or produced.

Accordingly, the purpose of this study is to conduct a bibliometric mapping of the AI-HRM literature published since 2015 to identify the field's dominant research themes, its structural fragmentation, and the underexplored intersections between technological adoption and organizational outcomes.

2. METHOD

2.1. Identification

The primary data were retrieved from the Scopus database on January 5, 2026. Scopus was selected for its comprehensive coverage of peer-reviewed academic literature and powerful citation-tracking features.

As shown in Table 1, the keywords "artificial intelligence AND human resource management" were used to identify relevant studies. More precisely, TITLE-ABS-KEY (artificial AND intelligence AND human resource AND management). Additionally, publications from 2015 to 2025 were chosen for the past ten years; for example, PUBYEAR > 2014 AND PUBYEAR < 2026. Business, management, and accounting, as well as social sciences, economics, and econometrics, were the only subjects covered: LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "ECON"). For this review, only English-language publications were chosen (LIMIT-TO (LANGUAGE, "English")). Only conference papers and articles were allowed to be published (LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "ar")). The only sources used in this review were journals, AND LIMIT-TO (SRCTYPE, "J").

2.2. Screening and selection

We began with two key terms: artificial intelligence and human resource management. Upon conducting this search, 2,949 documents were retrieved from Scopus. By applying our pre-specified inclusion and exclusion criteria, applied automatically via the Scopus database, we excluded 2,327 publications. This yielded a final sample of 622 publications.

We suggested the following questions to conduct this analysis:

1. How are publications on HRM and AI distributed over the period 2015–2025, and what trends can be observed over this decade?

2. Which academic journals are the most influential and widely cited in the research area of AI applied to HRM?

3. Which countries have the strongest impact and contribution in the global research landscape on AI and HRM?

Table 1. Criteria for inclusion and exclusion

Category	Included	Excluded
Field of research	Studies focusing on the link between Artificial Intelligence (AI) and Human Resource Management (HRM).	Studies not related to AI or HRM.
Publication period	Works published between 2015 and 2025.	Publications prior to 2015 as well as those released in 2026.
Language of publication	Studies written and published in English.	Articles published in languages other than English.
Type of document	Peer-reviewed journal articles and conference proceedings.	Theses, books, book chapters, blogs, and other non-academic outputs.
Source type	Research sourced exclusively from academic journals.	All materials from non-journal sources were excluded.

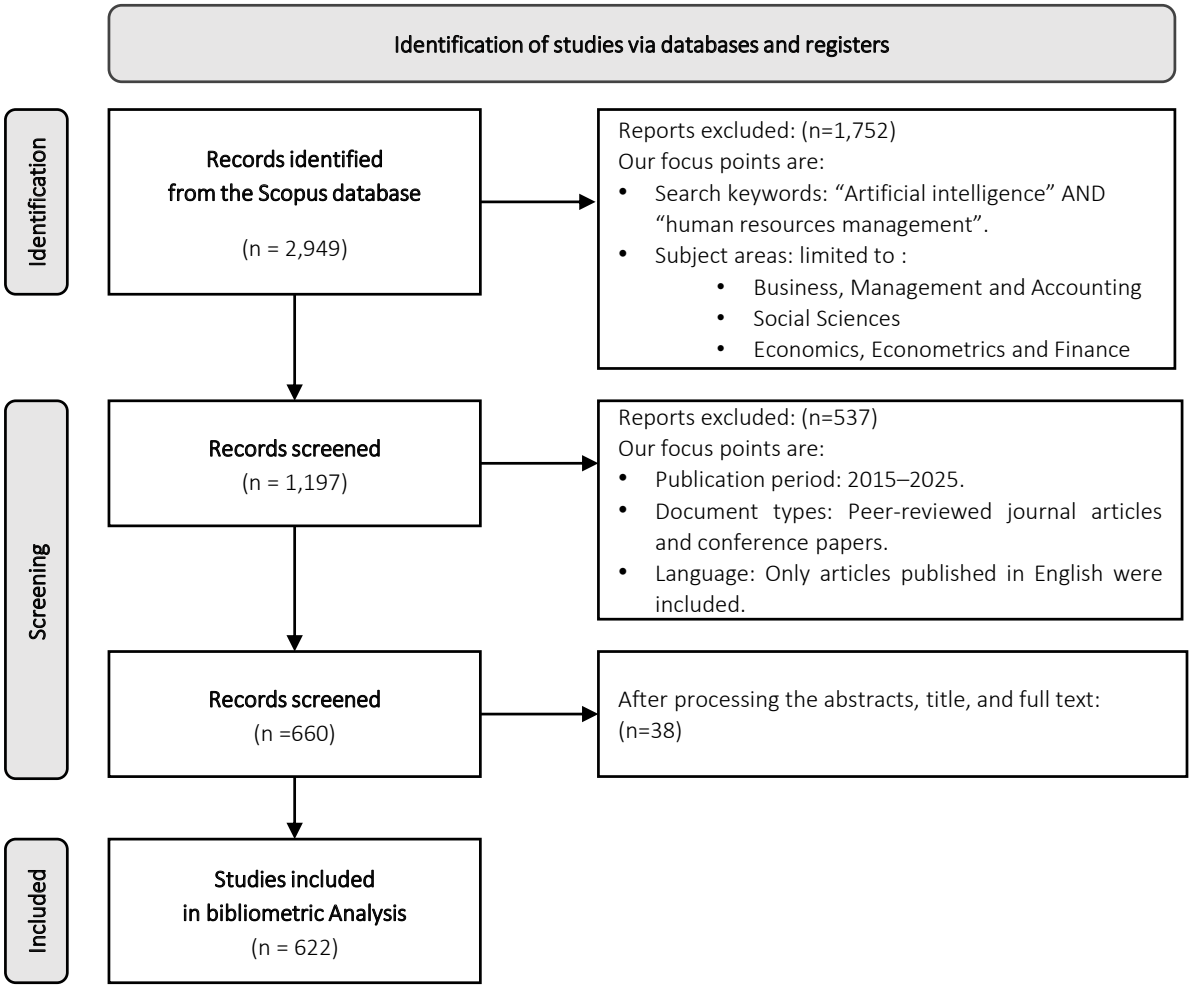


Figure 1. PRISMA framework

4. Who are the most productive and influential authors in the field of AI and HRM research?

5. What are the key terms and keywords most commonly used in publications related to AI and HRM, reflecting the main research themes and focus areas?

6. What are the main subject areas most frequently associated with publications on Artificial Intelligence and Human Resource Management?

2.3. Inclusion and reporting

The findings of this bibliometric analysis are presented using the PRISMA framework (Figure 1).

The initial literature search within the Scopus database yielded 2,949 records using the keyword combination "Artificial intelligence" AND "human resources management". From this initial pool, 1,752 reports were immediately excluded by limiting the search to the specific subject areas of Business, Management and Accounting; Social Sciences; and Economics, Econometrics and Finance, leaving 1,197 records for the initial screening stage. During this first screening phase, an additional 537 reports were excluded by restricting the dataset to peer-reviewed journal articles and conference papers published between 2015 and 2025 and including only English-language articles. This narrowed the selection down to 660 records, which were screened a second time. A final substantive evaluation of topical relevance was conducted through manual title, abstract, and full-text screening, leading to the exclusion of 38 more reports. This systematic refinement resulted in a final dataset of 622 publications, which were then extracted and processed using VOSviewer for bibliometric and trend mapping.

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3. RESULTS

We present data systematization and bibliometric calculations to address the research questions formulated in the methodology. Given the nature of this scoping and bibliometric review, no formal hypotheses were tested. Instead, the outcomes are organized to provide an exhaustive overview of the intellectual structure, publication trends, and thematic evolution of artificial intelligence in human resource management (AI-HRM) between 2015 and 2025.

3.1. The distribution by years

This study presents a systematic analysis of publication trends in scholarly articles on the convergence of artificial intelligence (AI) and human resource management (HRM) from 2015 to 2025 (Figure 2). This provides an insightful understanding of how research interests related to AI and HRM have evolved.

The results show a strong, sustained increase in scholarly contributions on integrating artificial intelligence (AI) into human resource management (HRM). Specifically, annual publications increased from nine articles in 2015 to 218 in 2025, reflecting a more than twenty-four-fold increase over the research period. While the number of publications increased moderately from 2015 to 2018, remaining below 15 articles annually, a stronger rate of growth is evident from 2019. Most notably, growth accelerates from 2021, with publications rising from 46 articles in 2021 to 130 in 2024, peaking at 218 articles in 2025. This continued growth indicates the rising significance of AI-driven HRM.

3.2. The most relevant journals

Figure 3 shows the distribution of articles on artificial intelligence and human resource management from 2015 to 2025 based on the total number of publications in pertinent journals.

Our research on AI and HRM from 2015–2025 shows a clear distinction in academic impact through total publications and most-cited articles.

In this dataset, Sustainability (Switzerland) is the most productive source on this topic, leading with 12 topic-related publications and one excellent paper with about 93 citations. The other major highly specialized journals are the International Journal of Human Resource Management, published by Taylor & Francis, which has 11 topic-related publications, with the top paper cited 909 times, as well as the Human Resource Management Review, published by Elsevier, which has 10 papers on this topic, with a breakthrough article cited 818 times, subject to considerable focus. Other business and technology journals making strong contributions include Lecture Notes in Business Information Processing (Springer Nature), with 10 publications on this issue and a leading article with 28

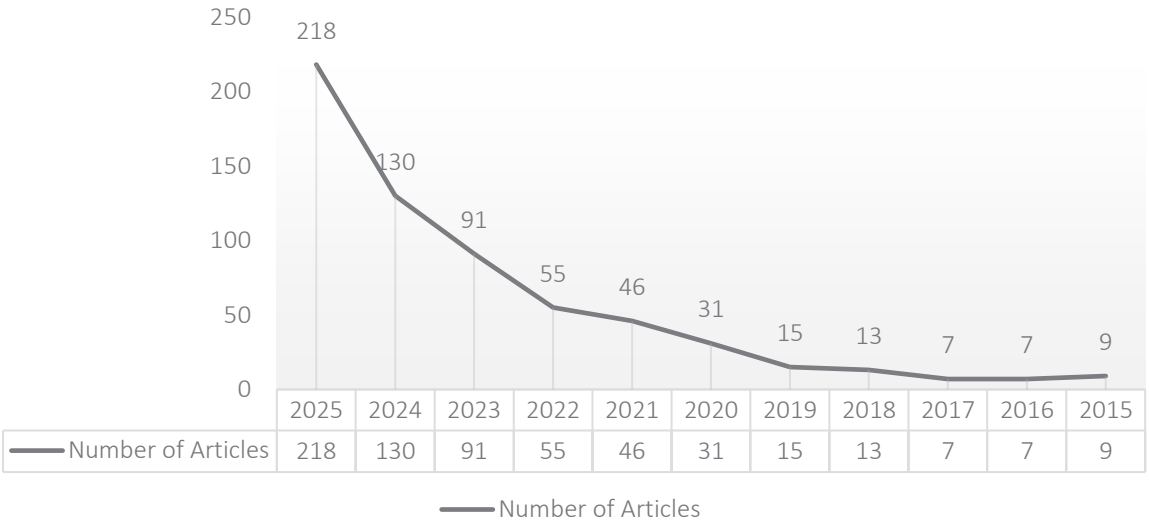


Figure 2. Total number of publications during ten years

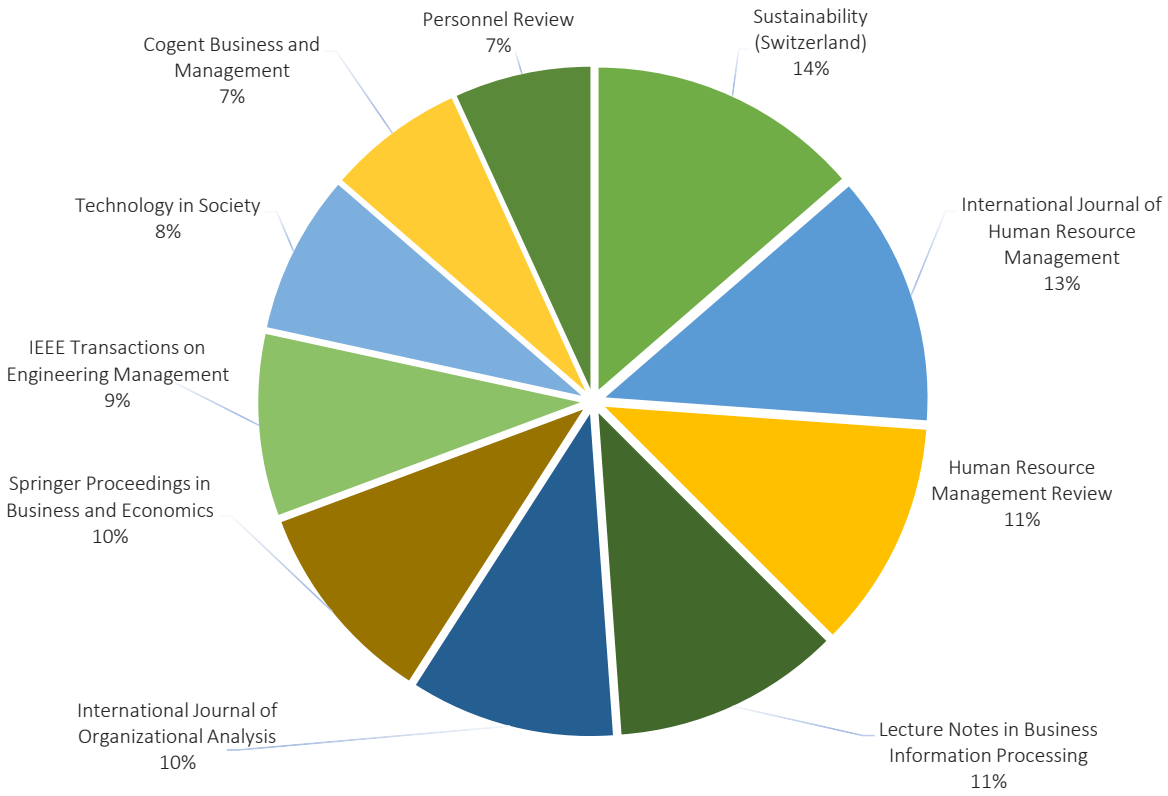


Figure 3. Most relevant journals in AI and HRM research according to total publications

Table 2. Top 10 journals in AI and HRM

Journal	TP	Most cited article	Times cited	Publisher
Sustainability (Switzerland)	12	Artificial-Intelligence-Supported Reduction of Employees' Workload to Increase the Company's Performance in Today's VUCA Environment	93	MDPI
International Journal of Human Resource Management	11	Artificial intelligence, robotics, advanced technologies and human resource management: a systematic review	909	Taylor & Francis
Human Resource Management Review	10	Unlocking the value of artificial intelligence in human resource management through AI capability framework	818	Elsevier
Lecture Notes in Business Information Processing	10	On-the-fly performance-aware human resource allocation in the business process management systems environment using Naïve Bayes	28	Springer Nature
International Journal of Organizational Analysis	9	Opportunities and risks of artificial intelligence in recruitment and selection	128	Emerald Publishing
Springer Proceedings in Business and Economics	9	Exploring the AI Revolution in Human Resource Management: Key Insights and Case Studies	2	Springer Nature
IEEE Transactions on Engineering Management	8	Team Formation for Human-Artificial Intelligence Collaboration in the Workplace: A Goal Programming Model to Foster Organizational Change	89	IEEE
Technology in Society	7	Drivers of generative artificial intelligence to fostering exploitative and exploratory innovation: A TOE framework	188	Elsevier
Cogent Business and Management	6	Maximizing employee engagement through artificial intelligence organizational culture in the context of leadership and training of employees: Testing linear and non-linear relationships"	90	Cogent OA
Personnel Review	6	The machine/human agentic impact on practices in learning and development: a study across MSME, NGO and MNC organizations	27	Emerald Publishing

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citations. Next are the International Journal of Organizational Analysis (Emerald Publishing) and Springer Proceedings in Business and Economics (Springer Nature), which have published nine articles each. Nevertheless, their academic value differs, since the highest-ranking article in the International Journal of Organizational Analysis has amassed 128 citations, while the highest-ranking article in Springer Proceedings in Business and Economics has only two.

Likewise, articles for journals with a lower number of publications had a significant thematic impact based on the most cited flagship articles (see Table 2). The most notable case was for Technology in Society published by Elsevier with seven publications, in which a flagship article had 188 citations. While IEEE Transactions on Engineering Management had eight publications, with flagship articles cited 89 times, and Cogent Business and Management had six publications, with flagship articles cited 90 times, in contrast to Personnel Review by Emerald Publishing, which had six publications and showed a lower citation impact, led by a key article cited 27 times.

3.3. The most significant countries

Table 3 highlights the countries contributing most significantly to AI-HRM research. For each of these top 10 countries, Table 3 lists the institutional affiliation of the author of the most-cited article published by authors affiliated with institutions in that country.

The pattern of research in AI and HRM for the period 2015–2025, as identified in this study, reveals a clear dominance by a small group of global leaders, led predominantly by Asian and Western nations. In this context, India ranks first with the largest research volume (116 TP), driven primarily by the FORE School of Management in New Delhi, followed closely by China (114 TP), with the Business School of Sichuan University in Chengdu as the primary institutional contributor. The United States occupies the third position with 98 TP, heavily supported by contributions from the Wharton School in Philadelphia. In comparison, the United Kingdom takes fourth place with 49 TP, led by Birmingham Business School at the University of Birmingham. Further shaping the global landscape, Australia holds the fifth spot with 33 TP represented by the School of Business and Law at Central Queensland University, followed closely by Indonesia in sixth with 32 TP with Pelita Harapan University, Germany in seventh with 31 TP led by the Faculty of Business and Economics at the University of Goettingen, France in eighth with 27 TP anchored by ESSEC Business School, and Italy in ninth with 26 TP through the Department of Enterprise Engineering at the University of Rome Tor Vergata. Finally, the United Arab Emirates ranks tenth with 25 TP, represented by the Faculty of Engineering & IT at The British University in Dubai (Figure 4), a position that, despite being at the tail of the top ten, highlights the growing strategic importance of the Middle East region in the global HRM digital transformation process (Figure 5).

Table 3. Top 10 significant countries in AI and HRM research

Rank	Country	TP	Most significant academic institutions
1	India	116	FORE School of Management, New Delhi, India
2	China	114	Business School of Sichuan University, Sichuan University, Chengdu, China
3	The United States	98	Wharton School, Philadelphia, PA, the United States
4	The United Kingdom	49	Birmingham Business School, University of Birmingham, University House, Birmingham, the United Kingdom
5	Australia	33	School of Business and Law, Central Queensland University, Melbourne, Australia
6	Indonesia	32	Management, Pelita Harapan University, Indonesia
7	Germany	31	Faculty of Business and Economics, University of Goettingen, Goettingen, Germany
8	France	27	ESSEC Business School, Cergy, France
9	Italy	26	Department of Enterprise Engineering, University of Rome Tor Vergata, Via del Politecnico, Italy
10	The United Arab Emirates	25	Faculty of Engineering & IT, The British University in Dubai, Dubai, the United Arab Emirates

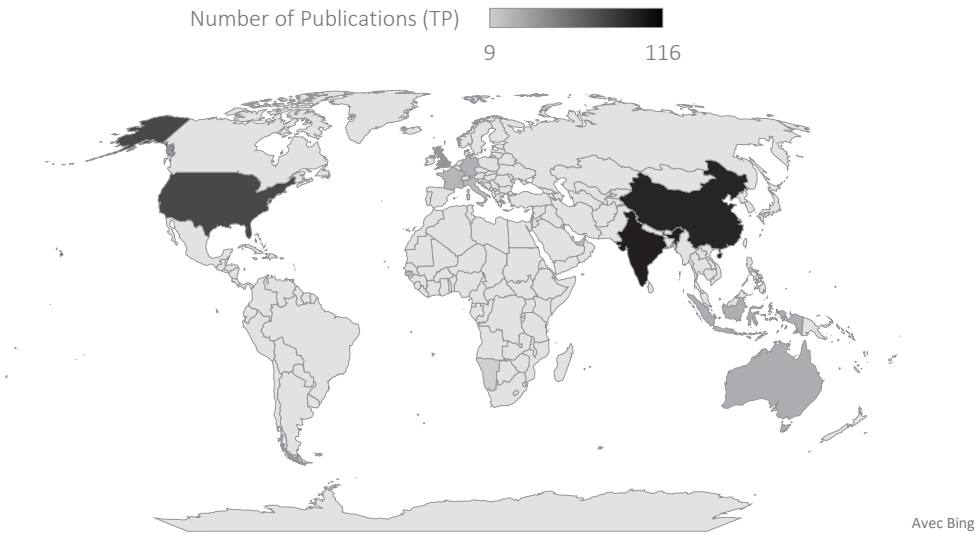


Figure 4. Countries with the most publications in the fields of AI and HRM

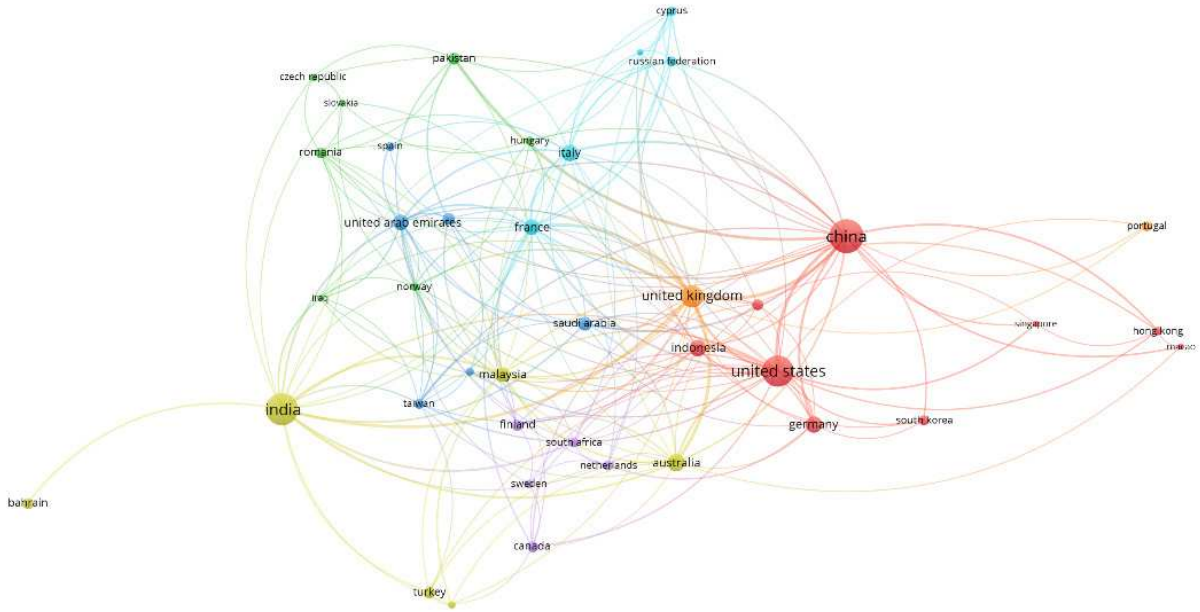


Figure 5. Relationships of co-authorship with other countries

3.4. The most prolific authors

Table 4 summarizes the most important authors in relation to the fifth research question, which focuses on scholars who have made the most significant contributions to the fields of artificial intelligence and human resource management.

The international community of scholars shaping the field of AI and HRM is characterized by a mix of established global leaders and emerging contributors (Figure 6). With regard to this topic, Pawan Budhwar from Aston Business School in the UK, who first published in 1996, and A. Malik from the University of Newcastle in Australia, who has been active since 2009, emerge as prominent scholars, leading the field with seven papers each. They are joined by other key enduring contributors, namely M. Demir from Arizona State University in the USA with five papers, along with Arpan Kumar Kar from the Indian Institute of Technology in Delhi, India with four papers, and N.J. McNeese from the College of Engineering, Computing and Applied Sciences in the USA with four papers. Meanwhile, the discipline is undergoing geographical expansion, driven by emerg-

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Table 4. Top 10 authors in the AI and HRM research area

Author	First publication year	TP	Current affiliation	Country
Budhwar, P.	1996	7	Aston Business School	The United Kingdom
Malik, A.	2009	7	The University of Newcastle	Australia
Demir, M.	2014	5	Arizona State University	The United States
Kar, Arpan Kumar	2011	4	Indian Institute of Technology Delhi	India
McNeese, N.J.	2008	4	College of Engineering, Computing and Applied Sciences	The United States
Agarwal, A.	2014	3	Symbiosis International (Deemed University)	India
Benabou, A.	2024	3	Université Sultan Moulay Slimane	Morocco
Chowdhury, S.	2011	3	TBS Business School	France
Christofi, M.	2013	3	Cyprus University of Technology	Cyprus
Dias, Á.	2014	3	Iscte Business School	Portugal

ing authors making focused contributions, such as A. Agarwal from Symbiosis International in India with three papers starting in 2014, A. Benabou from Université Sultan Moulay Slimane in Morocco with three papers starting in 2024, S. Chowdhury from TBS Business School in France with three papers starting in 2011, M. Christofi from Cyprus University of Technology in Cyprus with three papers starting in 2013, and Á. Dias from Iscte Business School in Portugal with three papers starting in 2014. The contribution of A. Benabou, whose work in this area began in 2024, illustrates the continuous internationalization of this field and the deliberate rise of Morocco to the top of the international AI-HRM knowledge organization.

3.5. The primary research keywords and trends

Figure 7 presents the main research keywords and their frequency of occurrence, answering the sixth question about the most popular research terms and keywords related to artificial intelligence and human resource management.

VOSviewer indicates keywords with circles, where font size correlates with relative frequency of use and font color corresponds to algorithmic cluster identification. The present network map is built up of 184 items, nine clusters, and 3,515 links, with a total link strength of 8,963. Please note that the VOSviewer algorithm calculates nine technical clusters within the co-occurrence algorithm, and in this analysis, these should be taken as preliminary, broadly defined thematic groupings, rather than independently validated research fields.

Among these algorithmic groupings, Clusters 1 and 2 are the most predominant in terms of node size, primarily due to the high frequency and repetition of their constituent keywords, which position them as the structural core of the network. "Artificial intelligence" and "human resource man-

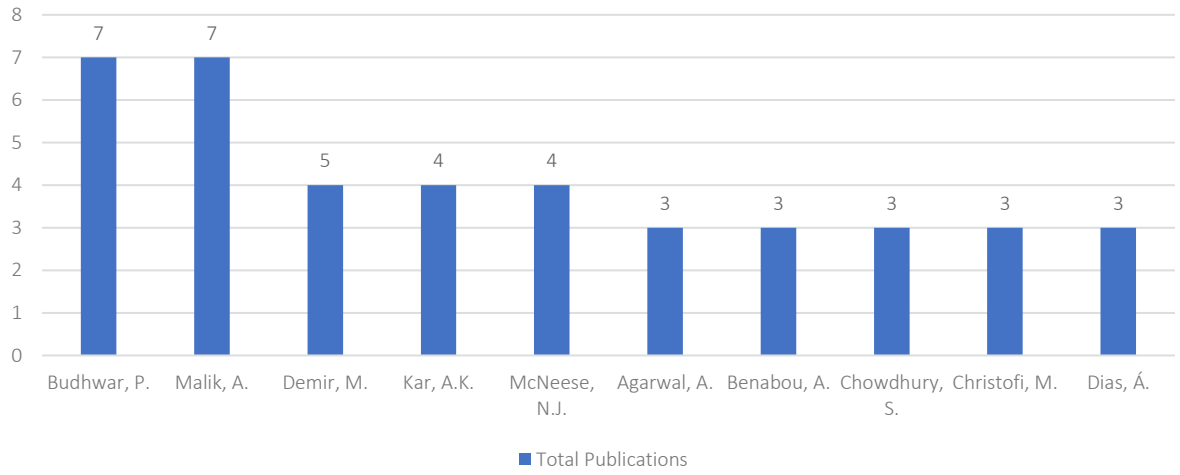


Figure 6. Most prolific authors in the domains of research on AI and HRM

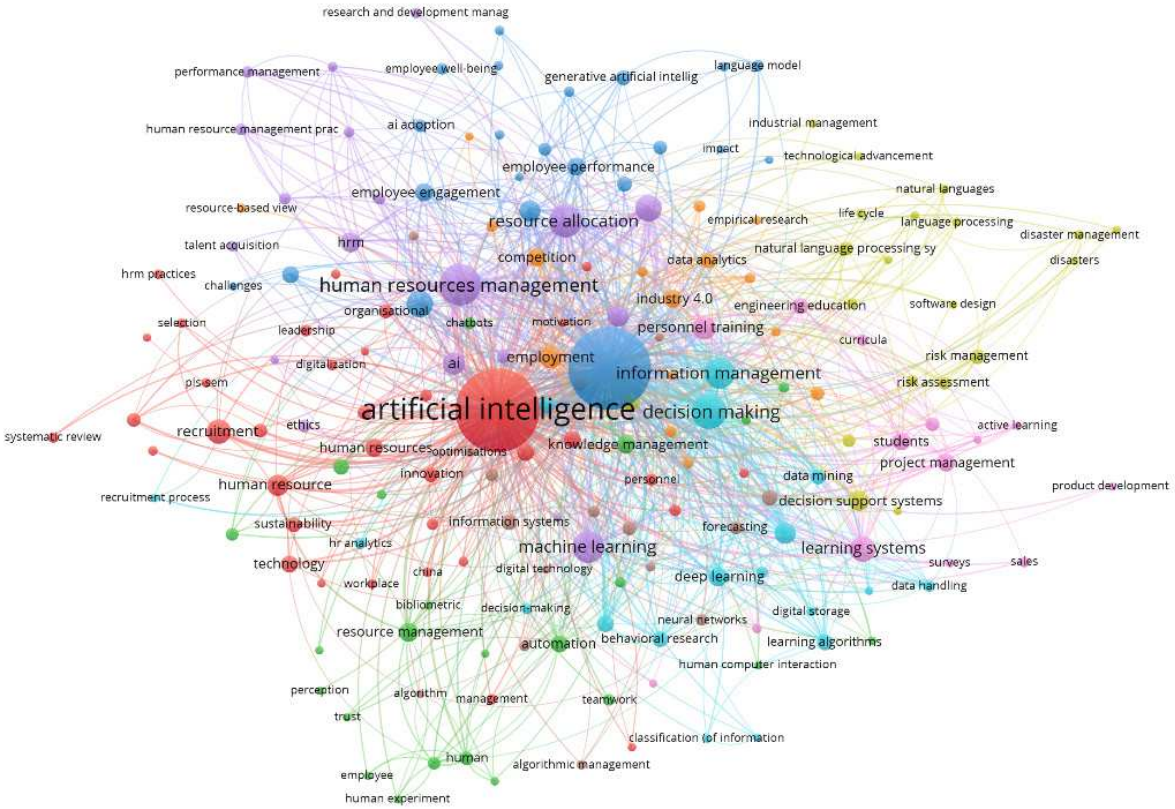


Figure 7. Keyword co-occurrence associations: All keywords

agement" emerge as major nodes shaping this thematic landscape. The first cluster is dominated by "human resource management" and "managers," highlighting the managerial and organizational foundations of the field, while the inclusion of "employment" reflects sustained attention to labor-related dynamics. The second cluster centers on "chatbots," "automation," and "knowledge management," indicating a focus on automated service delivery within HR. The third cluster adopts a technology-driven perspective, encompassing "recruitment," "machine learning," and AI-based selection processes. The fourth cluster highlights the strategic component of HRM by combining "resource allocation," "decision making," and information management concepts, showing AI's role in decision optimization. The fifth cluster groups "risk management," "decision support systems," and risk prevention, revealing a research stream focused on occupational safety and risk forecasting. The sixth cluster combines "e-learning," "learning systems," and "personnel training," illustrating the rise of digital learning systems in HR. The seventh cluster converges back on core concepts of "artificial intelligence" and "human resource management," reinforcing their systemic centrality. The eighth cluster groups "data mining," "big data," and related digital tools, emphasizing the data infrastructure underpinning AI-driven HRM. Finally, the ninth cluster captures emerging themes tied to technological innovation and organizational system evolution. Together, these provisionally interpreted algorithmic clusters map a rich, multifaceted, and highly interconnected research landscape led by the prominent themes of the first two clusters (Figure 7).

The keywords are indicated by default with circles. The larger the circle, the more significant the element. Additionally, colors are assigned to each group of elements, i.e., clusters. At first glance, the map highlights artificial intelligence as a central concern. Overall, there are 53 items, six clusters, 774 links, and a total link strength of 3,489.

Across the algorithmic combinations, Clusters 1 and 2 dominate (their primary major nodes are indicated by the large red and green nodes, respectively) because the keywords they comprise are repeated so often that they dominate the available

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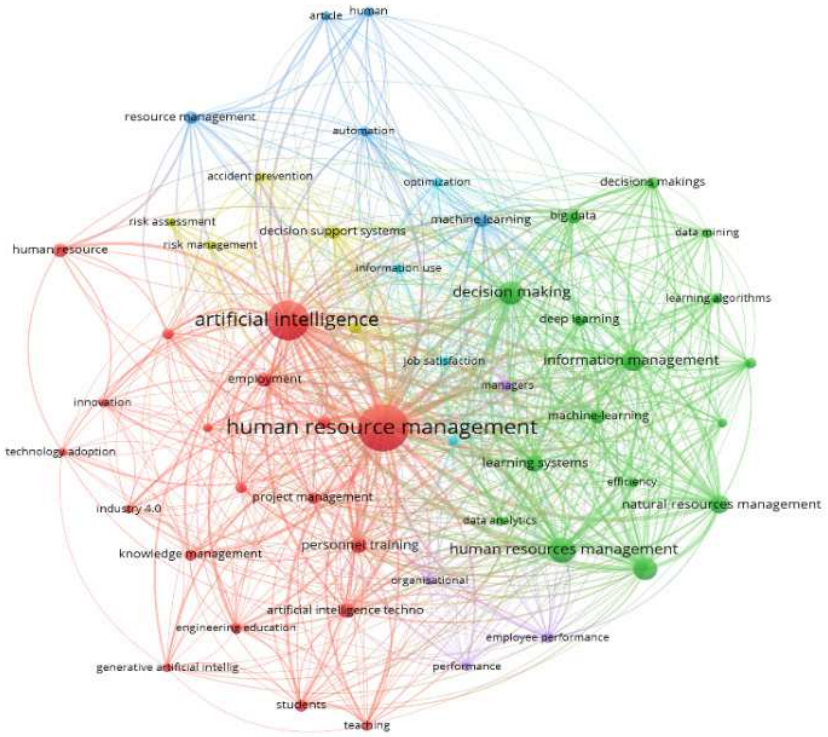


Figure 8. Keyword co-occurrence map with index keywords

lexical space. They can be identified as the backbone of the entire network. In the initial visualization, the map focuses predominantly on artificial intelligence and human resource management as the two primary axioms of the research. Together, Figures 7 and 8 produce a set of secondary keywords linked to artificial intelligence and human resource management, exploring a provisionally mapped, efficiently interconnected research space (Figure 8).

3.6.The most important subject area

The seventh research question (Figure 9) aims to investigate which specific subject areas are the most significant within the intersection of AI and HRM to identify the core domains that have attracted the greatest scholarly attention and are most influential in shaping this field.

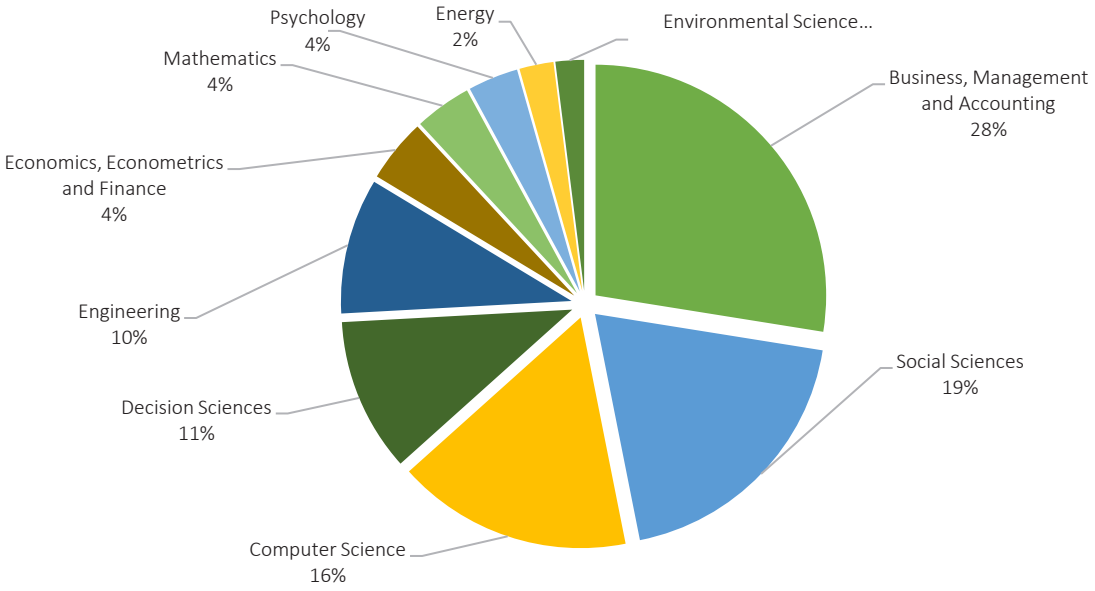


Figure 9. Number of publications by subject area

Analysis of AI-HRM research reveals a narrow yet interdisciplinary focus. Business, management, and accounting lead with (414) publications due to AI's role in decision-making, followed by social sciences (291) for its insights into AI adoption implications. Computer science (248) remains crucial for technical digital HR support, while decision sciences (162) and engineering (143) contribute to optimization and infrastructure. Other significant contributions include economics, econometrics, and finance (67) and mathematics (60) for frameworks/methodologies, psychology (53) for employee-AI interactions, and energy (36) and environmental science (30) as emerging areas. Overall, while centered on management and technology, this broad disciplinary spread reflects the interdisciplinary growth of AI-HRM in modern organizational management.

4. DISCUSSION

The findings indicate that scholarly knowledge on integrating artificial intelligence (AI) into human resource management (HRM) is characterized by rapid expansion alongside progressive consolidation. This dual dynamic is clearly reflected in both the quantitative growth of the literature and the qualitative sophistication of emerging analytical frameworks. Empirically, the field has experienced a substantial increase in scholarly output, rising from nine published articles in 2015 to 218 articles in 2025. Such a trajectory suggests that research on AI in HRM can no longer be considered an emergent or exploratory domain; rather, it has evolved into a well-established and strategically significant area of academic inquiry. This maturation is further evidenced by the growing interdisciplinarity and thematic diversity of the field, as traditionally HRM-focused journals increasingly intersect with outlets dedicated to technology, innovation, and sustainability. Consequently, the study of AI in HRM has moved beyond a purely administrative perspective to encompass a more complex and multidimensional relationship between human resource practices and technologically mediated decision-making processes. In parallel, the literature highlights the emergence of a "human-in-the-loop" paradox, which introduces a set of conceptual and practical challenges related to the capacity and role of human actors in AI-assisted HR decision-making. While the integration of AI systems promises enhanced efficiency and analytical precision, it simultaneously raises critical questions regarding human oversight, accountability, and the reconfiguration of decision authority within HR functions.

Geographically, the predominance of contributions from India, China, and the United States signals a significant shift in the landscape of HR innovation. This trend suggests that established HRM theories, historically grounded in Western cultural and institutional contexts, are increasingly being challenged and reinterpreted. Notably, emerging economies, particularly India and China, are no longer positioned merely as consumers of knowledge but are becoming influential producers shaping the global research agenda. This transformation is further reinforced by the growing scholarly contributions from Southeast Asia and the Middle East, collectively indicating an "eastward shift" in the production of HR knowledge and the evolution of HRM theory. Importantly, this shift also brings to the forefront critical concerns related to diversity and digital divides, as well as their implications for the equitable development and implementation of AI-driven HRM practices across different socio-economic and institutional contexts.

While this study offers a comprehensive overview, it is constrained by several limitations, including its exclusive reliance on the Scopus database, which may exclude publications or articles found in alternative repositories like Web of Science. Additionally, the research explicitly focused on AI in HRM rather than deep-diving into specialized tools.

CONCLUSION

This study was designed to map and critically evaluate the evolving intersection between emerging digital technologies and foundational human resource practices through a PRISMA-guided scoping review of 622 documents from the Scopus database (2015–2025). The findings highlight a dramatic surge in annual research output expanding from nine articles in 2015 to 218 in 2025 driven primarily by scientific hubs in India, China, and the United States, alongside specialized outlets like Sustainability.

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Furthermore, intellectual mapping reveals a thematic consolidation around nine core clusters, predominantly centered on AI-driven recruitment and training. These results demonstrate that the academic landscape has successfully transitioned from disparate, exploratory inquiries into a coherent, mature, and structured research discipline. From these insights, it can be concluded that the integration of AI into HRM represents a fundamental revolution in the employment relationship, shifting strategic decision-making toward continuous human-AI collaboration. Nevertheless, these conclusions must be interpreted in light of certain limitations, notably the study's exclusive reliance on Scopus indexing, the rapid evolution of 2025 data, and the inherent difficulty of capturing employees' lived experiences through bibliometric methods. To address these gaps, future research must examine AI-driven job performance predictions, conduct comparative studies across Global South institutional contexts, and employ longitudinal designs to assess long-term algorithmic impacts on career trajectories. Ultimately, prioritizing a research agenda focused on ethics, contextual nuances, and human-centric technology will ensure that digital transformation empowers the global workforce.

AUTHOR CONTRIBUTIONS

Conceptualization: Yassir El Guenuni, Omar Yaakoubi, Walid Rahbi, Nisrine Srainy, Imane Iraqi, Omar Boubker, Jaouad Rharzouz.
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Visualization: Yassir El Guenuni, Omar Yaakoubi.
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Writing – review & editing: Yassir El Guenuni, Omar Yaakoubi, Walid Rahbi, Nisrine Srainy, Imane Iraqi, Omar Boubker, Jaouad Rharzouz.

DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

During the preparation of this manuscript, the authors used Gemini AI minimally to rephrase two short paragraphs within the discussion and the conclusion sections. After use, the authors reviewed and edited the text and assume full responsibility for the content of the publication.

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