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Artificial Intelligence in Talent Acquisition and Recruitment: A Bibliometric Analysis using VOS Viewer

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ABSTRACT

Artificial Intelligence stands at the forefront of a transformative era in human resource management. It promises not to replace human judgment but to augment and enhance human capabilities, enabling HR professionals to focus on more strategic, creative, and empathetic aspects of talent management. The bibliometric analysis conducted in this study provides comprehensive insights into the evolving landscape of artificial intelligence applications in talent acquisition and recruitment. Through multiple analytical approaches, the researcher has identified key patterns in research collaboration, citation networks, and thematic focus within this specialized field. The study analyses the collection of academic publication sourced from Scopus database and has recognized the most prominent authors, journals, collaborative networks and the country which contribute more towards the field of artificial intelligence in Talent acquisition and Recruitment. This bibliometric analysis provides informative viewpoints of AI in talent acquisition and recruitment and can explore in future research area.

***Keywords**: Artificial Intelligence, Human Resource Management, Talent Acquisition and Recruitment.*

Introduction

The integration of AI into human resource management represents a paradigm shift from conventional recruitment and talent management approaches. Historically, HR processes were characterized by manual, time-consuming, and often subjective methods of candidate screening, performance evaluation, and talent development. The emergence of AI technologies has fundamentally disrupted this landscape, introducing data-driven, intelligent systems capable of processing vast amounts of information with remarkable speed and accuracy. Research across multiple studies reveals the multifaceted impact of AI on human resource management. The technological intervention extends far beyond simple automation, encompassing critical dimensions. Recruitment Efficiency in AI has demonstrated remarkable capabilities in streamlining talent acquisition processes. Studies indicate significant improvements, including up to 40% reduction in hiring time and 30.8% enhancement in hire quality, Bias Reduction One of the most promising aspects of AI implementation is its potential to mitigate human biases in recruitment. Quantitative research suggests that AI can promote more objective candidate evaluation, with mean scores indicating improved diversity and fairness in selection processes. Strategic Talent Management is beyond operational efficiency; AI enables more sophisticated talent intelligence strategies. Machine learning algorithms can now identify candidate potential, predict performance, and support more nuanced decision-making in human resource management.

Multiple studies consistently highlight AI's transformative potential in enhancing recruitment efficiency. (Choudhari et al, 2025) demonstrated that AI significantly improves screening processes, with mean scores indicating high attraction of candidates (4.12) and screening efficiency (4.05). Many organizations revealing a 40% reduction in hiring time and a 30.8% improvement in hire quality (Choudhari et al, 2025). These findings underscore AI's capacity to streamline recruitment by automating time-consuming tasks like resume filtering and candidate shortlisting (Manoharan,2024).

AI's impact spans across four dimensions namely speed, quality, dependability, and relational aspects. While acknowledging AI's operational advantages, the study cautions against over-relying on algorithmic management (Dhanya Pramita, 2024). Many nuanced perspectives are highlighted demonstrating how AI enables more precise candidate identification and implementation of talent intelligence strategies (Agnihotri et al, 2023). A recurring theme across studies is the importance of ethical implementation of AI in HR, emphasizing the need to navigate challenges such as data privacy and algorithmic bias (Khurana et al., 2025). Highlighting that while 68% of HR managers are ready to adopt AI, careful consideration of user acceptance and long-term impacts is crucial. These studies consistently recommend maintaining human oversight and continuous evaluation of AI tools to ensure fairness and transparency (Bedi et al.,).AI integration requires substantial organizational transformation and stress the importance of training HR personnel and maintaining human oversight. Researchers specifically notes the critical role of innovation in talent acquisition, particularly in technology-driven sectors like IT, emphasizing the need for continuous technological adaptation. (Sajin Jose, 2019). Despite challenges, the research collectively portrays AI as a promising tool for HR management. The reports notable improvements, including a 300% increase in feedback frequency and a 20% increase in employee satisfaction. The studies unanimously suggest that while AI can significantly enhance HR processes, it should complement rather than replace human judgment and interaction (Manoharan,2024).

Literature Review

Dhanya Pramita, (2024) explored the multifaceted impact of AI on talent acquisition through a comprehensive lens of four key dimensions. The study, conducted using semi-structured interviews with HR professionals in Sweden, revealed that AI significantly influences organizational recruitment processes. By identifying critical aggregate dimensions - speed and efficiency, quality, dependability, and relational aspects, the research provides nuanced insights into AI's role in HR. The study cautioned against an overemphasis on operational metrics, emphasizing the importance of maintaining human interactions and candidate experience. Despite limitations related to sample size and the rapidly evolving AI landscape, the research underscores the need for a balanced approach to AI integration in talent acquisition.

Agnihotri et al, (2023) traced the evolutionary trajectory of recruitment practices, highlighting the transformative role of AI in talent intelligence and acquisition. Utilizing a mixed-methods approach combining surveys and literature review, the research demonstrates how machine learning and data analysis can enhance organizational efficiency in talent identification. The findings reveal that AI-driven processes significantly improve the effectiveness of talent intelligence by enabling more sophisticated data collection and implementation. The study did not restrict itself for documenting AI's capabilities, identifying critical research gaps and providing a comprehensive framework for understanding AI's potential in revolutionizing recruitment practices.

Choudhari et al, (2025) provided a quantitative exploration of AI's impact on talent acquisition, focusing on HR professionals' perceptions and adoption rates. The study investigates the relationship between perceived ease of use and AI adoption, revealing promising results across multiple dimensions. With high mean scores indicating high performance for candidate attraction, for screening efficiency, and for diversity promotion the researcher presents a case for AI integration. The study particularly emphasized AI's potential in reducing recruitment biases and attracting a wider candidate pool. By providing a framework for understanding AI's future implications in HR practices, contributed significant insights into the technological transformation of talent acquisition.

Vishvapujita et al, (2025) highlighted the growing significance of AI across various HR functions, including talent acquisition, employee relations, and learning & development. Employing a quantitative approach with structured questionnaires and non-probability-convenience sampling, the study focused on a comprehensive overview of AI adoption levels. The findings emphasized the critical importance of training HR personnel, maintaining human oversight, and continuously evaluating AI tools for fairness and transparency. The researcher offered valuable insights into the relationships between AI

implementation and organizational HR practices, contributing to the existing literature on technological innovation in human resource management.

Bedi et al, (2024) study offered a forward-looking perspective on AI's potential in talent acquisition, with a focus on organizational readiness and implementation strategies. The research revealed that 68% of HR managers are prepared to adopt AI within the next year, highlighting the technology's growing acceptance. The study explored critical factors such as recruitment efficiency, employee perception, and organizational culture and emphasized the need for ethical considerations and long-term impact assessments, presenting a balanced view of AI's transformative potential in recruitment practices.

Khurana et al., (2025) provided a comprehensive examination of AI's integration into Human Resource Management, focusing on its transformative potential and associated challenges. Utilizing secondary data, the study offers a critical analysis of how AI enhances operational efficiency and supports data-driven decision-making. The research importantly highlights the need to navigate ethical challenges, particularly concerning data privacy and algorithmic bias. By emphasizing the importance of maintaining essential human interactions, the study provides a nuanced perspective on AI's role in fostering diverse and inclusive workplaces. The findings call for HR professionals to adapt and acquire new skills to effectively align with emerging AI technologies.

Manoharan, (2024) provided a detailed examination of AI's benefits in talent management, drawing from primary data collected from 100 HR professionals. The researcher presented an impressive quantitative improvement, including a 40% reduction in hiring time, 30.8% improvement in hire quality, and 300% increase in feedback frequency. Many factors such as recruitment processes, performance management, and employee engagement, have been explored. The researcher critically addressed challenges like data privacy and algorithmic bias while presenting AI as a significant opportunity for enhancing strategic decision-making in HR functions.

Sajin Jose, (2019) focused on the IT industry, provided a literature-based exploration of innovation in recruitment and talent acquisition. The study emphasized the crucial role of technological advancements in organizational growth and HR effectiveness. By analyzing various articles, books, and journals, the research underscores the importance of continuous technological adaptation in maintaining a competitive workforce. The researcher concluded that innovation in recruitment is essential for success, particularly in technology-driven sectors, highlighting the need for organizations to embrace and integrate the latest HR technologies and strategies.

Methodology

The bibliometric analysis was initiated through the systematic collection of scholarly data from Scopus, selected for its comprehensive indexation of peer-reviewed academic publications across diverse disciplines. Scopus presents a particularly advantageous data repository due to its extensive coverage of journals, conference proceedings, and other scholarly outputs, thereby providing a robust foundation for examining the relations of Artificial Intelligence (AI) , Talent Acquisition and Recruitment practices. A methodologically rigorous search strategy was implemented to ensure comprehensive data capture while maintaining relevance to the research domain. The query construction incorporated a carefully selected lexicon of terms encompassing both broad conceptual frameworks (such as AI applications within Human Resource Management) and specific technological implementations within talent acquisition contexts. This approach facilitated the inclusion of literature addressing various dimensions of the research phenomenon, including HR digitization and analytics applications. The temporal parameters of the investigation were constrained to publications from 2020 to 2025, thereby ensuring the analysis captured contemporary developments and emergent trends within this rapidly evolving field. This methodological framework yielded a corpus of 135 research articles for subsequent analysis.

The analytical framework employed multiple bibliometric indicators to elucidate the structural and intellectual characteristics of the research domain. Citation analysis served as a fundamental metric for assessing scholarly influence, where the frequency of citation functioned as a quantitative indicator of a publication's impact on subsequent research trajectories. Articles demonstrating elevated citation frequencies were identified as seminal contributions that have significantly shaped the theoretical and empirical landscape of AI applications in talent acquisition contexts. Complementing this approach, cluster analysis was employed through VOS viewer to identify thematic concentrations within the literature. This analytical technique facilitated the visual representation of closely associated nodes,

thereby illuminating cohesive research themes, influential theoretical frameworks, and emergent conceptual paradigms within the field. The holistic integration of multiple bibliometric indicators—including co-authorship networks, keyword co-occurrence patterns, citation metrics, bibliographic coupling relationships, and co-citation structures—provided a comprehensive analytical framework for examining the intellectual architecture of research on AI in talent acquisition and recruitment. This multi-dimensional approach enabled the identification of pivotal contributions, collaborative patterns, conceptual frameworks, and knowledge gaps, thereby offering valuable insights for theoretical advancement and suggesting promising avenues for future scholarly inquiry in this domain.

Analysis using VOS Viewer

Keyword Analysis

- **Co-occurrence and Keyword Analysis**

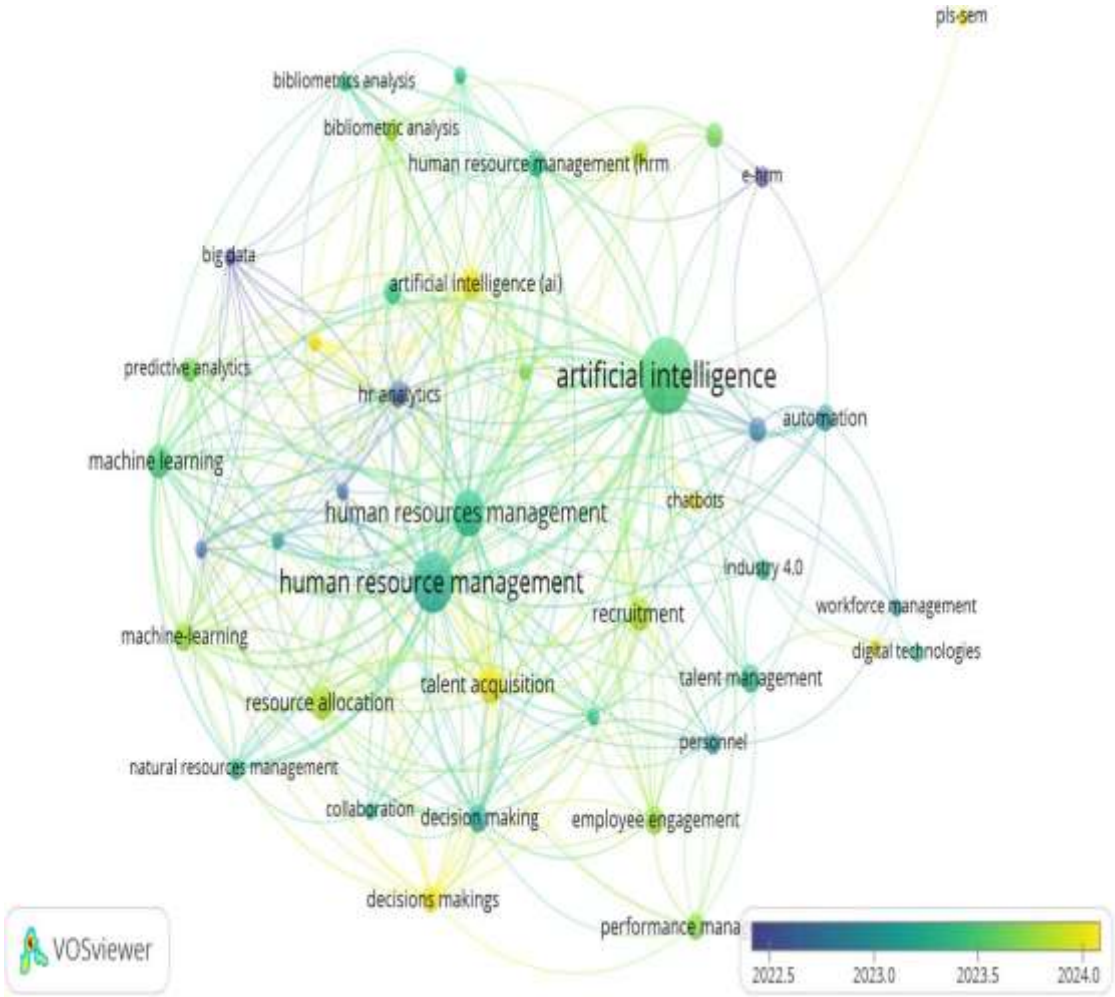


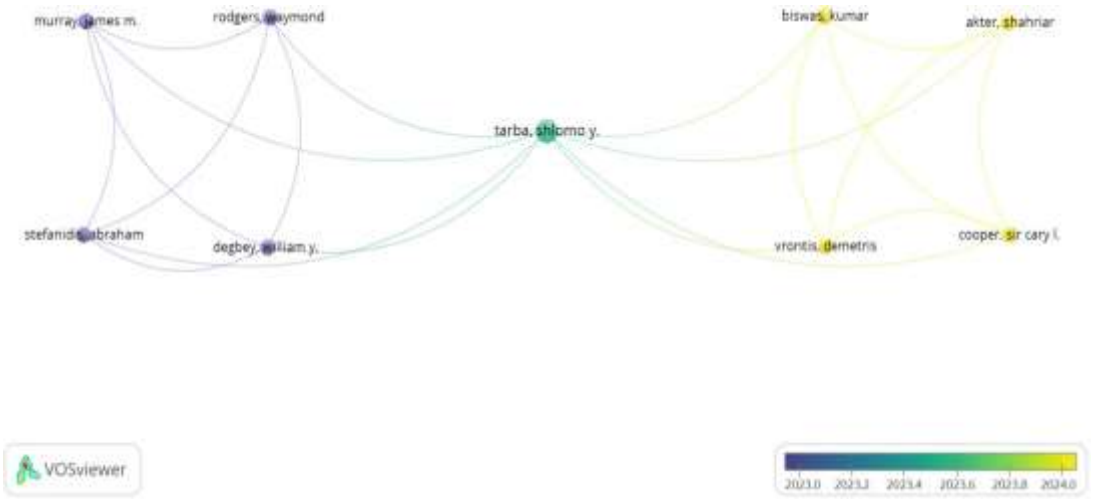
Fig 1: VOS Viewer visualization of co-occurrence and all keywords

For analyzing the co-occurrence of keywords, “Keywords” which have minimum number of occurrences is taken as 3 where out of 504 keywords, 42 meet the threshold. For each 42 keywords, the total strength of the co-occurrence links other keywords. Fundamental Keywords were “artificial intelligence”, “Human resource management”, “Resource allocation”, “Talent acquisition”, “Decision making”, “Machine learning”, “Employee engagement”, and “Performance management”.

The network visualizations highlight the immersed area in the field of Artificial intelligence in Talent acquisition through keywords.

Co -Authorship Analysis

- **Co-Authorship and Authors**



In co-authorship author the network visualization is created by giving the minimum number of documents of an author as 1 and minimum number of citations of an author as 1. From the sum of 247 papers the network of the larger set of connected papers consists of 9 authors. The most frequently cited author is TarbaShlomoy and followed by Arora, Mittal Amit. The link shows that these authors are highly collaborative in the field of talent acquisition integrated with artificial intelligence.

- **Co-authorship and Countries**

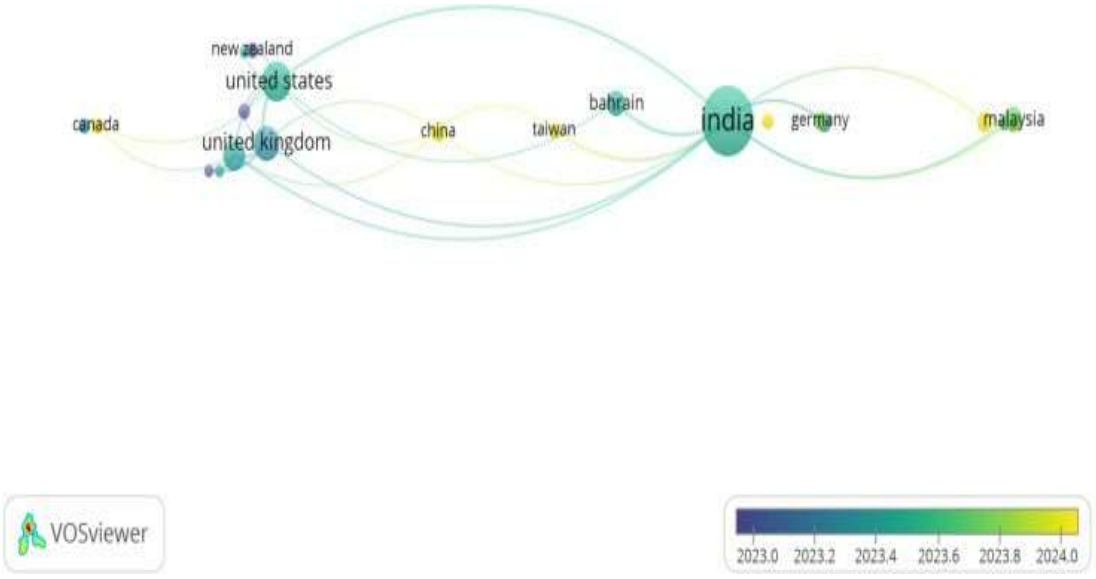


Fig. 3: VOS Viewer visualization of co-authorship and countries

The minimum number of documents of a country is made as 2 documents Out of 58 countries considered 26 countries met the thresholds. India has contributed a greater number of papers in the field of Artificial intelligence in Talent acquisition and Recruitment. India has 52 documents and has more of citation in this narrowed area followed by United States, United Kingdom, Australia and Finland. The major contributing country is highlighted and global collaboration in AI in talent acquisition and Recruitment is shown under the network visualization. Hence, India serves as the major contributors for the review on AI.

Citation Anaysis

- **Citation and Authors**

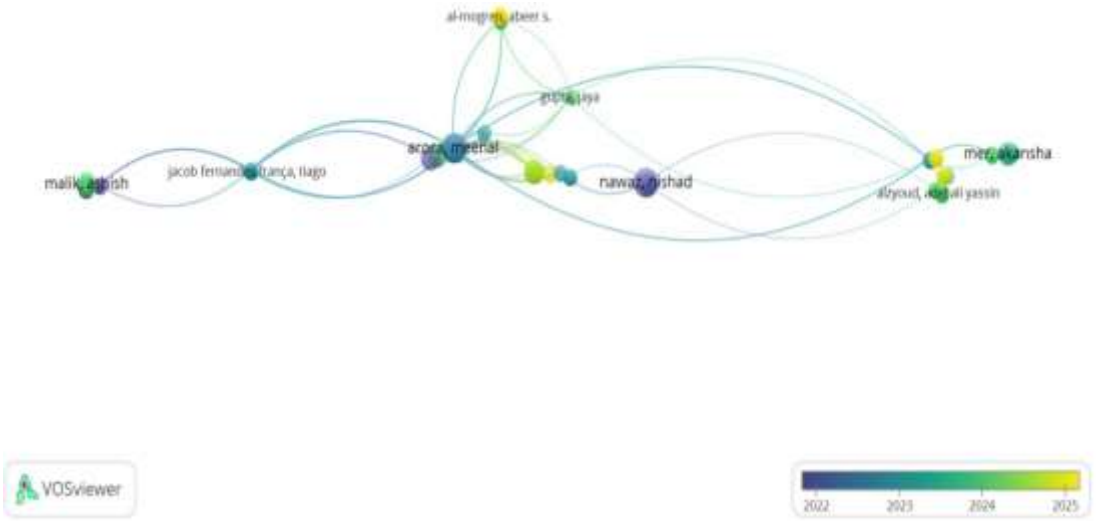


Fig 4: VOS Viewer visualization of Citation and authors

With a minimum of one paper needed to be included in the network, the graph displays the relationships between various writers according to the quantity of citations and documents they have generated. The size of the nodes, which stand in for individual writers, probably indicates how many documents or citations are connected to them. Clusters of writers who commonly co-author papers together or who have a lot of citations in common are depicted by the colors and linkages between nodes. The links and clustering reveal information about the academic community's citation influence and collaboration trends. The more cited author is highlighted in this visualization.

- **Citation and Documents**

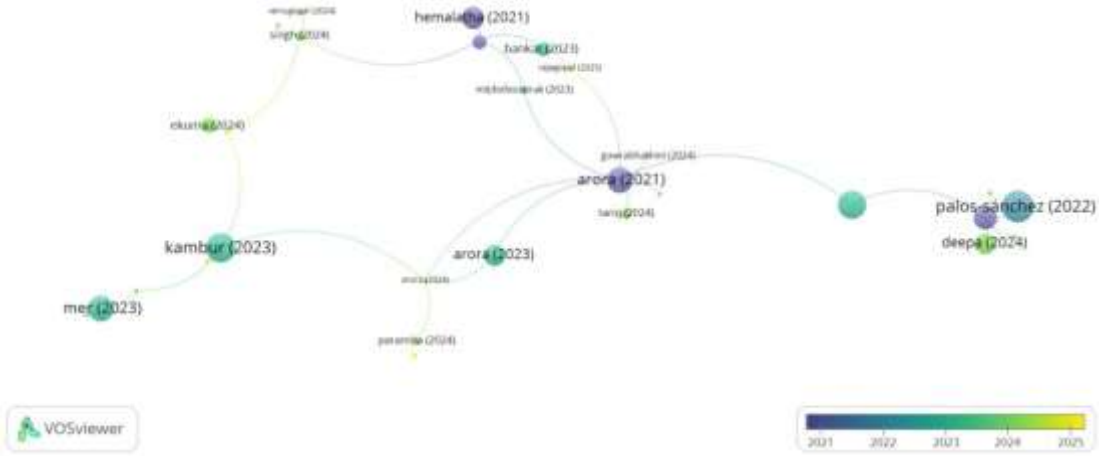
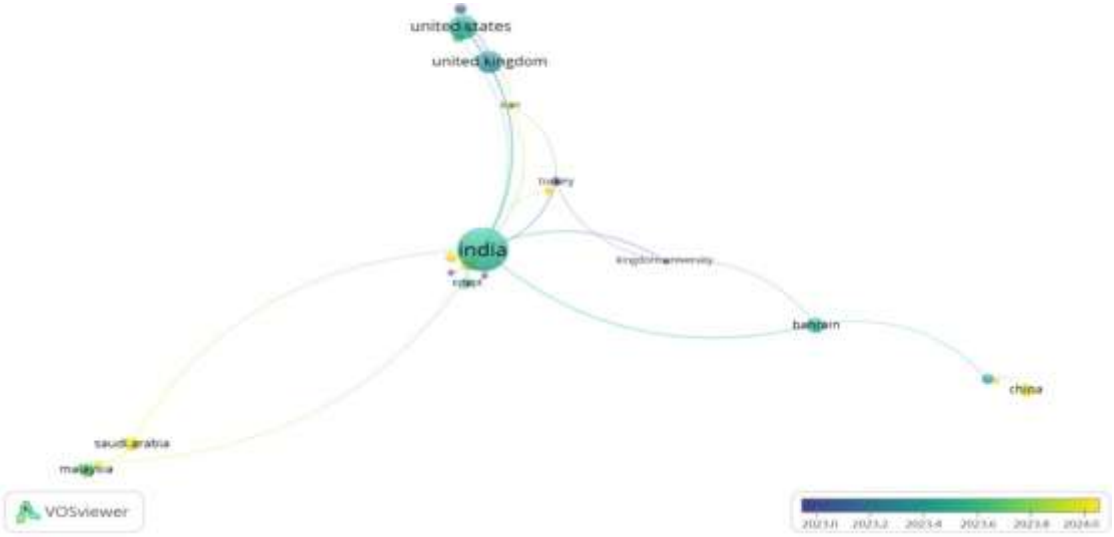


Fig 5: VOS Viewer visualization of Citation and Documents

It includes documents with at least one citation, with meeting the threshold. India has more research papers and more citation. Prominent documents by authors such as Hemalatha (2021), Arora (2021), and Palos-sanche (2022) are central, reflecting their significant impact on subsequent research domain. The connecting lines represent citation relationships, showing how these works are interlinked. These key contributors and the developers of knowledge in AI in Talent Acquisition and Recruitment, illustrating both foundational and emerging research trends are depicted. The cited documents and authors are depicted along with the year

- **Citation and Countries**



Based on joint research and citations, it displays a network of nations. Every node stands for a nation, and the size of the node most likely indicates how many documents or citations are connected to that nation. 58 countries meet the minimum requirement of two papers to be included. Prominent nations include India, USA, United Kingdom, and Spain. By emphasizing the nations that are essential to these networks such as India, USA showing them with larger nodes and numerous connections, the visualization sheds light on international research collaboration.

Bibliographic Coupling Analysis

- **Bibliographic Coupling and Authors**

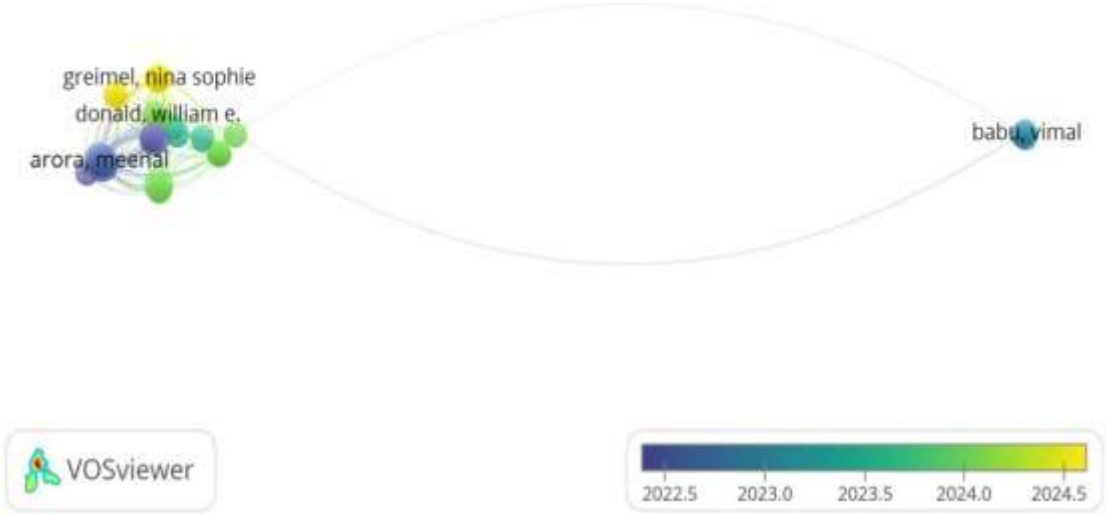


Fig 7: VOS Viewer visualization of bibliographic coupling and authors

In bibliographic coupling by authors common references found in their works, it shows the connections between writers. An author is represented by each node, and the size of each node indicates how many documents the author has written. The bibliographic coupling strength is indicated by the lines (edges) connecting nodes; larger lines signify stronger linkages. A minimum of two documents per author is required for inclusion, and 27 writers satisfy this requirement. Leading writers like Arora, Meenal, Mittal and Amit are crucial, indicating a strong connection between their studies. The above-mentioned authors have more cited papers.

Bibliographic coupling and countries

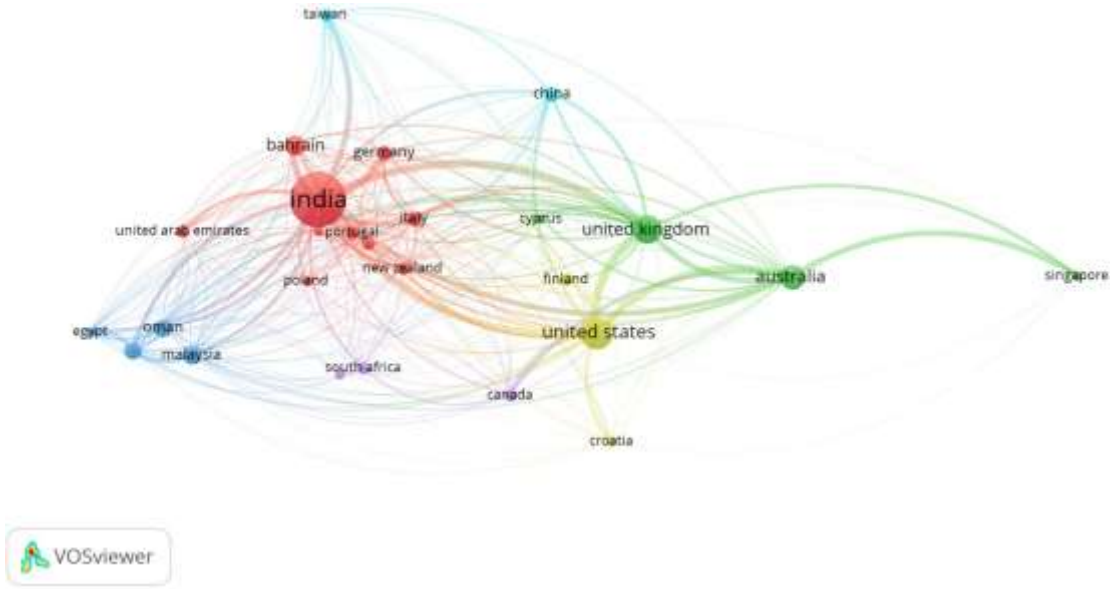


Fig 8: VOS Viewer visualization of bibliographic coupling and countries

In bibliographic coupling and countries, the size of each node, which stands for a nation, signifies the quantity of papers generated. The intensity of bibliographic coupling is shown by the edges connecting nodes; thicker lines signify stronger ties. The minimum number of documents is taken as 2 and 26 countries meet the threshold. Greater numbers of publications and a high degree of research interconnection are suggested by larger nodes under which India, USA, UK and Australia falls. Based on common references across nations, this graphic illustrates the worldwide environment of research collaboration.

Co-Citation Analysis

- **Co Citation and Cited Reference**

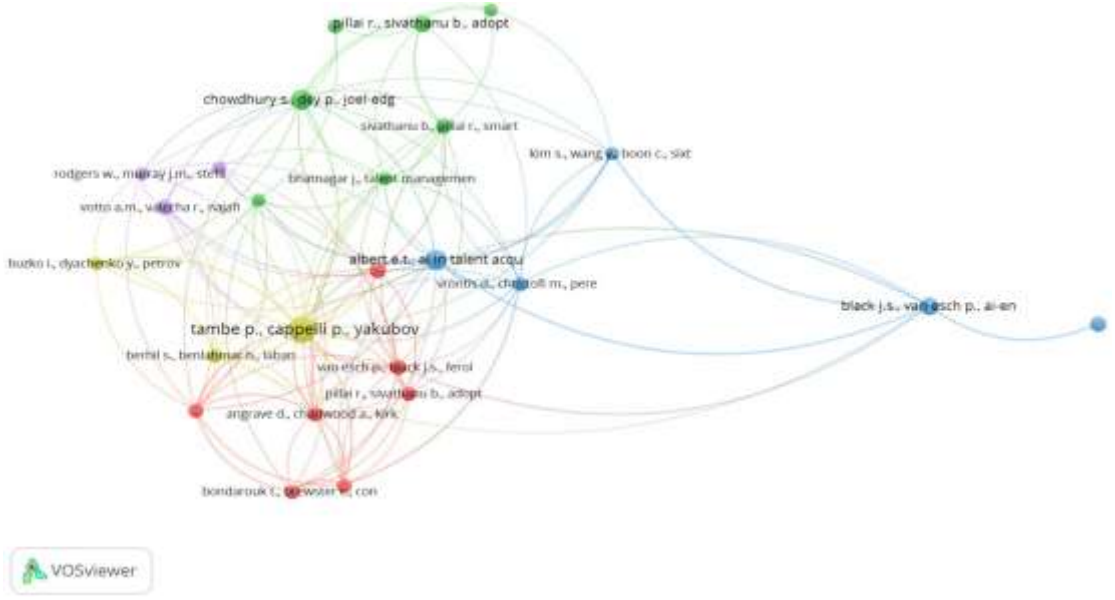
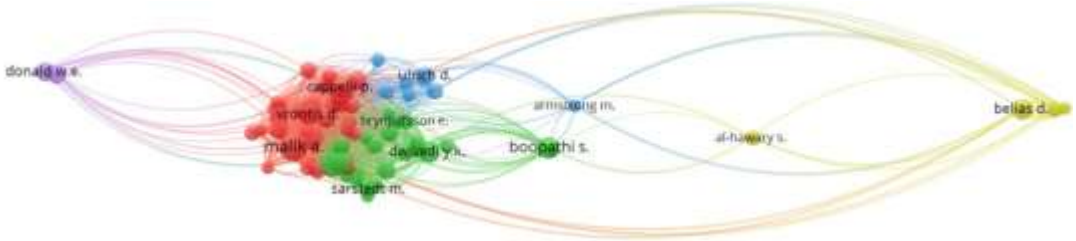


Fig 9: VOS Viewer visualization of Co citation and cited reference.

Under Co- citation analysis, Minimum number of citations of cited reference is given as 5 and 25 papers met the threshold. The size indicates the number of citations the paper has and from the Tambe p, Cappelli, Chowdhury. The field of Talent acquisition and Recruitment through AI has many papers and cited by many authors. The yellow node represents the more cited reference and from there the other nodes are linked shows the inter relationship of the citation. The more citation are from Tambe P, Cappelli, Chowdhury.

- **Co Citation and Cited Authors**



VOSviewer

In Co-citation and cited authors for network visualization the minimum number of citations of an author is indicated as 20. 70 authors meet the threshold for forming the clusters. The authors like Malika, Belias d, Budhwar P are more cited authors in the field of application of intelligence in Talent acquisition and Recruitment.

Implications

Bibliometric analysis of artificial intelligence in talent acquisition and recruitment provides significant insights into the current state of research in this area. The visualization of keyword co-occurrences revealed fundamental concepts leading the field, including “artificial intelligence,” “human resource management,” “resource allocation,” “talent acquisition,” “decision making,” “machine learning,” and “employee engagement,” indicating the multidisciplinary nature of this research area. The co-authorship network manifested notable collaborative patterns, with prominent researchers such as TarbaSY, Arora Meenal, and Mittal Amit emerging as central figures who have substantially influenced the field through their citations and collaborative striving . This collaboration network, though comprising only 9 authors from the analyzed 247 papers, signifies the presence of a concentrated core of researchers driving advancements in this specialized area.

Geographical analysis revealed that India has emerged as the leading contributor with 52 documents and the highest citation metrics, followed by the United States, United Kingdom, Australia, and Finland. This geographical distribution throwback both the global interest in AI applications for talent acquisition and the concentration of research expertise in specific regions, with 26 countries meeting the threshold criteria of at least two published documents in this field. Bibliographic coupling analysis established strong interconnections between the works of key authors like Arora, Meenal, and Mittal, indicating conceptual similarities in their research approaches. Similarly, bibliographic coupling between countries highlighted robust research relationships among India, USA, UK, and Australia, implying shared intellectual foundations and potentially collaborative research agendas. This bibliometric investigation exhibit that research on artificial intelligence in talent acquisition and recruitment is represented by collaborative networks, geographical leadership from India and other key nations, and an emerging foundation of influential works that are shaping the course of the field. These findings suggest both the development of this research area and opportunities for expanded international collaboration to address the evolving challenges at the intersection of artificial intelligence and human resource management. Most studies recognize limitations such as small sample sizes and the rapidly evolving nature of AI

technology. The literature calls for continued research, particularly in understanding AI's long-term organizational impacts, refining implementation strategies, and addressing ethical concerns. The existing research presents a balanced view of AI in HRM, recognizing its potential to revolutionize talent management. The combined research presents a delicate and multifaceted view of AI's role in Human Resource Management. While featuring significant potential for improved efficiency, accuracy, and strategic decision-making, the studies consistently emphasize the importance of ethical implementation, human oversight, and continuous adaptation. The swift advancement of technological innovation has accelerated a insightful transformation in organizational human resource management, with Artificial Intelligence (AI) emerging as a vital catalyst for revolutionary change. As businesses steer the complex landscape of talent acquisition, management, and development, AI has become increasingly instrumental in reshaping traditional HR practices, offering extraordinary opportunities for efficiency, precision, and strategic decision-making.

Scope for Future Research

The future scope is development of comprehensive ethical frameworks is indeed essential, particularly as AI systems in recruitment make increasingly consequential decisions about candidates 'careers. Future research should focus on developing comprehensive frameworks that maximize AI's benefits while mitigating potential risk and developing comprehensive frameworks that maximize AI's benefits while mitigating potential risks and maintaining the essential human elements of HR practices. Research should focus on creating industry-specific guidelines that address bias mitigation, transparency requirements, and appropriate human oversight mechanisms. Strategies for maintaining human-centric approaches will be vital as automation increases, with research needed on optimal human-AI collaboration models that leverage technological efficiency while preserving the interpersonal elements of recruitment that candidates value. Continuous assessment of AI tool effectiveness must move beyond short-term metrics to longitudinal studies examining how AI-assisted hiring decisions correlate with employee performance, retention, and team cohesion over extended periods.

Additional research opportunities might include cross-cultural implications of AI recruitment tools, regulatory compliance across different jurisdictions, and innovative approaches to candidate experience enhancement through thoughtful AI implementation.

References

1. Akter, S., Biswas, K., Vrontis, D., Cooper, S. C. L., &Tarba, S. Y. (2023). Mastering digital transformation in workforce management. *Production Planning & Control*, *35*(13), 1525–1532. https://doi.org/10.1080/09537287.2023.2270465
2. Arora, M., Prakash, A., Dixit, S., Mittal, A. and Singh, S. (2023), "A critical review of HR analytics: visualization and bibliometric analysis approach", *Information Discovery and Delivery*, Vol. 51 No. 3, pp. 267-282. https://doi.org/10.1108/IDD-05-2022-0038
3. Agnihotri et al., (2024) Agnihotri, A., Pavitra, K. H., Balusamy, B., Maurya, A., &Bibhakar, P. (2024). Artificial Intelligence Shaping Talent Intelligence and Talent Acquisition for Smart Employee Management. *EAI Endorsed Transactions on Internet of Things*, *10*. https://doi.org/10.4108/eetiot.4642
4. Barani Kumari, P., & Hemalatha, A. (2019). Perception towards artificial intelligence in human resources management practices – with reference to IT companies in Chennai. International Journal of Recent Technology and Engineering (IJRTE), 8(4S3), 61-65. https://doi.org/10.35940/ijrte.D1045.1284S319
5. Bedi et al.,(2024) Bedi, M. S., Arora, N., Badoni, P., & Paras, P. K. (2024). The Influence of Artificial Intelligence in the Talent Acquisition. *Proceedings - 2024 International Conference on Emerging Innovations and Advanced Computing, INNOCOMP 2024*, 94–100. https://doi.org/10.1109/INNOCOMP63224.2024.00025
6. Choudhari et al., (2025a) Choudhari, Y., Shrestha, P., Singh, G., & Bindra, S. (2025). The Impact of Artificial Intelligence (AI) on Talent Acquisition in Human Resource Management. In *Sunali_bindra@scmhrd.eduAABFJ* (Vol. 19, Issue 1).

7. Hemalatha, P. B. Kumari, N. Nawaz and V. Gajenderan(2021) , "Impact of Artificial Intelligence on Recruitment and Selection of Information Technology Companies," *2021 International Conference on Artificial Intelligence and Smart Systems (ICAIS)*, Coimbatore, India, 2021, pp. 60-66, doi: 10.1109/ICAIS50930.2021.9396036.

8. JOSE, S. (2019). INNOVATION IN RECRUITMENT AND TALENT ACQUISITION: A STUDY ON TECHNOLOGIES AND STRATEGIES ADOPTED FOR TALENT MANAGEMENT IN IT SECTOR. *INTERNATIONAL JOURNAL OF MARKETING & HUMAN RESOURCE MANAGEMENT*, *10*(3). https://doi.org/10.34218/ijmhrm.10.3.2019.001

9. Johnson et al.,(2020) Johnson, R. D., Stone, D. L., & Lukaszewski, K. M. (2020). The benefits of eHRM and AI for talent acquisition. *Journal of Tourism Futures*, *7*(1), 40–52. https://doi.org/10.1108/JTF-02-2020-0013

10. Kiran Paras, (2024)https://www.researchgate.net/publication/388947125 Kiran Parasa, S. (2024). Impact of AI in Compensation Management in HR Digital Transformation. *International Journal of Science and Research (IJSR)*, *13*(6), 1391–1392.

11. Khurana & Kapoor, n.d. R. D., Stone, D. L., & Lukaszewski, K. M. (2020). The benefits of eHRM and AI for talent acquisition. *Journal of Tourism Futures*, *7*(1), 40–52. https://doi.org/10.1108/JTF-02-2020-0013

12. Manoharan, P. (2024). A Review on AI Driven HR Systems: Revolutionizing HR Systems and Talent Management. *Scholars Journal of Engineering and Technology*, *12*(06), 179–184. https://doi.org/10.36347/sjet.2024.v12i06.001

13. Palos-Sánchez, P. R., Baena-Luna, P., Badicu, A., & Infante-Moro, J. C. (2022). Artificial Intelligence and Human Resources Management: A Bibliometric Analysis. *Applied Artificial Intelligence*, *36*(1). https://doi.org/10.1080/08839514.2022.2145631

14. Paramita, D., Okwir, S., & Nuur, C. (2024). Artificial intelligence in talent acquisition: exploring organizational and operational dimensions. *International Journal of Organizational Analysis*, *32*(11), 108–131. https://doi.org/10.1108/IJOA-09-2023-3992

15. S et al.,(2025)https://www.researchgate.net/publication/388947125 S, V., Mathew, T., Pooja, T., B, S., & Sathyamurthi, K. (2025). AI-Driven human resource management: Enhancing talent acquisition, employee relations and workforce development. *International Journal of Research in Management*, *7*(1), 320–327. https://doi.org/10.33545/26648792.2025.v7.i1d.294

16. Tambe, P., Cappelli, P. and Yakubovich, V. (2019) “Artificial Intelligence in Human Resources Management: Challenges and a Path Forward”, California Management Review, 61(4), pp 15–42, https://doi.org/10.1177/0008125619867910.

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