

CHAPTER 12

Literature Review of Integration of Artificial Intelligence in Talent Management Processes

Nilesh Lokhande and Pranita Burbure***

ABSTRACT

As integration of AI in industry is going in upward direction, assessing the impact of artificial intelligence (AI) on HRM practices becomes necessary. Focus of this paper is on the study of significance of the role of AI in shaping the talent management practices. Talent management in industry 4.0 can no longer be done by traditional methods. An intense competition exists among organizations to attract the top talented individuals with them. For this, AI is also being rapidly integrated into organizational talent management practices. Processes like recruitment, training, performance management, employee engagement, appraisal and succession are now more efficient. In this way, HR managers can focus on more important work. But there are few concerns like ethics and biasness of AI, which should be addressed. In the age of AI, its usage is growing many times in almost all the fields of Industry 4.0. However, there are few concerns like ethics and biasness, which should be addressed.

Keywords: Agentic AI; Talent management; Ethics.

1.0 Introduction

1.1 AI in workflow

Use of artificial intelligence in industry is expanding at rapid pace. In today's fast changing world, workflow is also changing. In HRM practices, talent management cannot be done in traditional ways. Corporations need to adapt or they will fall behind. By using right AI tools, employees can reduce their workload and improve their productivity. (Ryan Roslansky, HBR, 2023).

1.2 Origin of machine intelligence

In the early 20th century, Alan Turing made contribution in theoretical framework of machine intelligence.

**Corresponding author; Research Scholar, Department of Human Resource Management, S. B. Patil Institute of Management, Pune, Maharashtra, India (E-mail: pt2024h@protonmail.com)*

***Professor, Department of Human Resource Management, S. B. Patil Institute of Management, Pune, Maharashtra, India (E-mail: pranitaburbure@sbpatilmba.com)*

It became foundation of modern computing and AI research (Britannica Editors, 2026). His universal computing machine and conception of learning systems laid pathways for modern AI techniques which enabled autonomous decision processes. The official discipline of AI emerged following the 1956 Dartmouth Conference, where John McCarthy and colleagues coined “Artificial Intelligence” and developed early symbolic reasoning systems.

2.0 Evolution of AI in workflow

2.1 From traditional to generative and then to agentic AI

Now AI can do the reasoning, plan accordingly and execute the plan: Artificial intelligence is upgrading at rapid speed. From traditional to generative and then to agentic ai, its capacities are taking quantum leaps. The agentic ai can do the reasoning, plan accordingly and execute the plan with minimum human intervention. As per Nvidia CEO, agentic AI will change the workflow for businesses. Various AI service providers offer support to corporations in HR workflow, “from hire to retire”.

2.2 AI not just assistant but collaborator

There are several HR agent ai like Moveworks ai, Lyzer ai, Leena ai, Infeedo ai and also, other HR service providers. Corporations like IBM, Microsoft, Oracle provide agentic ai HR service to businesses. These HR agent ai are not just assistant but can do decision making up to certain extent for HR department. So, these digital agents are becoming integral part of HR processes. In We world forum, it is discussed that agentic ai would be the important disrupting factor for changing the business practices. In coming years, while recruitment, AI aptitude of the candidate would compete with experience as essential attribute.

3.0 Talent management in the Age of AI

3.1 Talent management as essential element in organization success

In 1998, group of Mckinsey consultant, coined the term “war for talent” and noted talent is important factor for organization excellence (Michael et al. 2001). Talent management is considered as essential element in organization success (Beecher and Woodward, 2009).

There are many definitions of Talent management. TM that refers to key concept such as definitions of talent management that refer to key concepts such as attracting, retaining, developing, and deploying talent (Scullion et al., 2010; Thunnissen, 2016).

3.2 Talent management - the challenging process

Talent management is challenging process which is matter of anticipating need for human capital and then setting out plan to meet it. (P. Cappelli, 2008). Talent management TM is “Managing leadership talent strategically, to put the right person in the right place at the right time” (Sloan et al, 2003). As per Pascal (2004), Talent Management comprises “managing the supply, demand, and flow of talent through the Human Capital Engine”. TM is a comprehensive organizational strategy that involves attracting, developing, and retaining skilled individuals to ensure sustained business success (Quilliam, 2023). Employee acquisition, employee development and employee retention are three main components of TM. (Faqihi and Miah, 2023).

3.3 AI as transformative force in talent management

AI technologies are being deployed by corporations. AI has emerged as transformative force in TM and it is making revolution in traditional HRM practices. (Chalwood, 2021).

Integration of AI in TM is making significant impact in facets like:

- Recruitment and candidate screening,
- Employee profile analysis,
- Learning and development,
- Performance management
- Employees engagement
- Appraisal
- Succession.

There is significant proliferation of AI enabled applications in the form of bots and digital, virtual and personal assistant (Mallik, et al, 2022). Also, use of AI is growing and respondents of the research were optimistic about use of AI in most HRM practices (N. Nawaz, et al, 2024).

4.0 Advantages of Use of AI in Talent Management

4.1 AI in organization in strategic workforce planning

Use of AI powered tools makes organization to predict the workforce needs with precision, to early identification of skill gap before it becomes critical helps organization in strategic workforce planning. (Chowdhury et al., 2023; Faqihi & Miah, 2023; Kamaruddin et al., 2023; Pillai & Sivathanu, 2020). (Colombo, Rish - see ekum 2023)

4.2 AI in job advertisement

Top talented individuals do not look work because employers fight to be the first to hire them before others (O. Allal-Chérif et al, 2021). Therefore, nowadays, AI is deployed in job advertisement which makes organization visible to potential candidates (Abber, Pillai).

4.3 AI in Recruitment process

In recruitment and candidate screening, workflow process is increasingly being automated. Candidate's resumes are analyzed by automated screening algorithms which makes the process streamlined. (Davenport and Ronanki, 2018). Recruiting chatbots, CV screening software and other AI tools make hiring less time consuming efficient and objective. (Chowdhury et al. 2023). A. Agnihotri, et al (2024) suggest that, AI has overall positive role in HRM practices like talent intelligence and acquisition. Talent intelligence and acquisition processes of HRM became better and more efficient because of integration of AI. AI-driven tools like personalized learning systems and predictive analytics offer more insightful data and help identify the most talented individual (Karaboga, 2023). From initial candidate screening to final selection recruitment is now revolutionizing (Black & van Esch, 2021).

4.4 AI in Onboarding - Personalized training experiences

AI powered machine learning algorithms assesses individuals learning patterns and will create customized contents for specific needs. Personalized training experiences are offered to employees with use of AI. (Van Dam, 2021). Hemalatha et al. (2021) suggest that AI capabilities such as natural language processing, machine vision, automation, and augmentation have a significant impact on talent management processes, leading to positive outcomes such as time and cost savings, and increased efficiency. AI and automation can also help automate tasks such as training and assessment (Albert, 2019; Jose, 2019). AI is helpful for organizations to identify and nurture future leaders. (Davenport and Ronanki, 2018).

4.5 AI in employee performance management-track, analyze and improve in real time

AI is contributing to employee performance management. Predictive analytics model use historical data of performance for predicting future outcomes, which is helpful in identification of high potential individual. (Marler and Boudreau, 2017). Work performances of the candidates are being predicted with deployment of mathematical programming and modeling technique. (Chen et al., 2022). AI is increasingly used in performance management which offers organization to track, analyze and improve employee performance in real time. (Qwader, S. R. and S. S. Abu Naser (2018).

4.6 AI in employee engagement - increasing job satisfaction and lowering attrition rate

AI driven tools gives personalized feedback which makes employee to grow in their role and it increases the engagement and job satisfaction level. (Sababa, R. Z., et al. (2022). In studies of organization it is found that AI enabled knowledge sharing platform lowers the attrition rate and increase the job satisfaction to high level (Yanamala, 2024a, 2024b; Saxena et al., 2023). With predictive analytics and pulse survey, HR managers are able for early intervention of and insights in employee sentiments which improves the retention program of organization (Faqihi & Miah, 2023).

4.7 AI in appraisal-From Traditional once annual evaluation to continuous evaluation

From Traditional performance evaluation was done on annual basis and it was subjective analysis of managers which could be influenced by biases. AI driven evaluation is done on a continuous basis, as it collects and analyze the data such as employee activities and productivity. This provides manager real time feedback for informed decision. (Radwan, H. I., et al. (2022). With AI, organization can monitor and respond to employee engagement in real time. (Chowdhury et al., 2023; Faqihi & Miah, 2023; Kamaruddin et al. 2023; Pillai & Sivathanu, 2020). (Colombo, Rish - see ekum 2023)

5.0 Challenges in Integration of AI

- Complexity of HR phenomenon
- Low trust and skepticism
- Stress due to continuous monitoring
- Biased decisions and more challenges while integration

Also, there are still challenges in integration of AI in TM. P. Cappelli, et al. (2019) suggest that, there are challenges for adoption of AI in HRM. Progress of use of AI in HRM depends on complexity of HR phenomenon and availability of data for analytics for better algorithms. Low trust and skepticism about AI decision making can lead to negative impact in TM process (Schmid and Raveendhran, 2022). AI-driven performance management tools have been linked to heightened employee stress due to continuous monitoring (Rozman et al., 2022 Rozman et al., 2023; Saxena & Kumar, 2020).

It is warned that if AL is not carefully managed, it will make biased decisions. Unfairness, gender related biases are found while using AI powered tools. This will be harmful which may lead to potential lawsuits and damage to brand (Upadhyay and Khandelwal, 2018). Organizations have to comply with ethical and privacy regulations, including GDPR. Organizations need to maintain transparency in AI driven decision making process. (Chalutz-Ben Gal & Tursunbayeva, 2023; Gonzalez et al., 2019; Hmoud & Várallyai, 2021). Previous research work is mostly about adoption of AI in talent

management. In our research study, we are going to take the previous research further and we will assess the impact of AI on talent management and its importance in reshaping the talent management practices.

6.0 Conclusion

Talent management in industry 4.0 is undergoing complete overhaul. As the capacities of artificial intelligence growing, the workflow of TM is also getting more and more automated. Organizations are integrating of AI in their talent management practices for more efficiency. But there are few concerns like ethics and biasness, which should be addressed in upcoming research work.

References

1. Acikgoz, Y., Davison, K. H., Compagnone, M., & Laske, M. (2020). Justice perceptions of artificial intelligence in selection. *International Journal of Selection and Assessment*, 28(4), 399-416. <https://doi.org/https://doi.org/10.1111/ijsa.12306> 628 Vol. 4 No. 4 (November, 2024)
2. Agnihotri, A., Pavitra, K. H., Balusamy, B., Maurya, A., & Bibhakar, P. (2023). Artificial intelligence shaping talent intelligence and talent acquisition for smart employee management. *EAI Endorsed Transactions on Internet of Things*, 10.
3. Albert, E. T. (2019). AI in talent acquisition: a review of AI-applications used in recruitment and selection. *Strategic HR Review*, 18(5), 215-221. <https://doi.org/10.1108/SHR-04-2019-0024>
4. Alexandru, B. V., Arabela, B., and Daiana, M. M. (2022). Advantages and Disadvantages of Using Artificial Intelligence in the Recruitment and Selection Processes in the Context of COVID-19. *Labour Market New Challenges: The COVID-19 Pandemic Context*, 3.
5. Buzko, I., Dyachenko, Y., Petrova, M., Nenkov, N., Tulenina, D., & Koeva, K. (2016). Artificial Intelligence technologies in human resource development. *Information and Computer Technologies*, 20(2), 27–29.
6. Black, J. S., & van Esch, P. (2021). AI-enabled recruiting in the war for talent. *Business Horizons*, 64(4), 513-524. <https://doi.org/10.1016/j.bushor.2021.02.015>
7. Britannica Editors. (2026). *History of artificial intelligence*. Britannica. <https://www.britannica.com/science/history-of-artificial-intelligence>
8. Cappelli, P., Tambe, P., & Yakubovich, V. (2019). Artificial Intelligence in Human Resources Management: Challenges and a Path Forward. *California Management Review*, 61, 5-42 .2019.

9. Charlwood, A. (2021). Artificial intelligence and talent management. *Digitalised talent management*, 122–136.
10. Chalutz-Ben Gal, H., & Tursunbayeva, A. (2023). Artificial intelligence, human talent, and trust: A management tool for assessing and supporting AI adoption in HRM. In *European Academy of Management 2023 Conference proceedings*.
11. Chamorro-Premuzic, T., Akhtar, R., Winsborough, D., & Sherman, R. A. (2017). The datafication of talent: How technology is advancing the science of human potential at work. *Current Opinion in Behavioral Sciences*, 18, 13-16.
12. Chen, C.-C., Wei, C.-C., Chen, S.-H., Sun, L.-M., & Lin, H.-H. (2022). AI predicted competency model to maximize job performance. *Cybernetics and Systems*, 53(3), 298-317.
13. Chowdhury, S., Dey, P., Joel-Edgar, S., Bhattacharya, S., Rodriguez-Espindola, O., Abadie, A., & Truong, L. (2023). Unlocking the value of artificial intelligence in human resource management through AI capability framework. *Human Resource Management Review*, 33(1), 100899.
14. Davenport, T. H. and Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard business review*, 96(1), pp. 108–116.
15. Faqihi, A., & Miah, S. J. (2023). Artificial Intelligence-Driven Talent Management System: Exploring the Risks and Options for Constructing a Theoretical Foundation. *Journal of Risk and Financial Management*, 16(1), 31.
16. Huang, J. (2025). The rise of agentic AI and its impact on enterprise workflows. CES 2025 Keynote. NVIDIA Blog. <https://blogs.nvidia.com/blog/ces-2025-jensen-huang/> Huang, J. (2025).
17. Jha, S., & Janardhan, M. (2024). Transforming Talent Acquisition: Leveraging AI for Enhanced Recruitment Strategies in HRM and Employee Engagement. *Library Progress International*, 44(3), 8857-8867.
18. Kamaruddin, N., Rahman, A. W. A., & Harris Jr, F. C. (2023). Enhancing talent development using AI-driven curriculum-industry integration. *Environment-Behaviour Proceedings Journal*, 8(26), 377-382.
19. Maity, S. (2019). Identifying opportunities for artificial intelligence in the evolution of training and development practices. *Journal of Management Development*, 38(8), 651-663.
20. Malik, A., Budhwar, P., Patel, C. and Srikanth, N. R. (2022) May the bots be with you! Delivering HR cost-effectiveness and individualised employee experiences in an MNE. *The International Journal of Human Resource Management*, 33 (6). pp. 1148-1178. ISSN 1466-4399.
21. Marler, J. H., and Boudreau, J. W. (2017). An evidence-based review of HR Analytics. *The International Journal of Human Resource Management*, 28(1),3–26.

22. Nishad Nawaz a, Hemalatha Arunachalam b, Barani Kumari Pathi, Vijayakumar Gajenderan d (2024). The adoption of artificial intelligence in human resources management practices. *International Journal of Information Management Data Insights*, 4 (2024)
23. Ore, O., and Sposato, M. (2022). Opportunities and risks of artificial intelligence in recruitment and selection. *International Journal of Organizational Analysis*, 30(6),1771–1782.
24. Oihab Allal-Chérif, Alba Yela Aránega, Rafael Castaño Sánchez (2021). Intelligent recruitment: How to identify, select, and retain talents from around the world using artificial intelligence, *Technological Forecasting and Social Change*, Volume 169, August 2021.
25. Pillai, R., & Sivathanu, B. (2020). Adoption of artificial intelligence (AI) for talent acquisition in IT/ITeS organizations. *Benchmarking: An International Journal*, 27(9), 2599-2629.
26. Qin, C., Zhang, L., Cheng, Y., Zha, R., Shen, D., Zhang, Q., Chen, X., Sun, Y., Zhu, C., & Zhu, H. (2023). A comprehensive survey of artificial intelligence techniques for talent analytics. *arXiv preprint arXiv:2307.03195*.
27. Qwaider, S. R. and S. S. Abu Naser (2018). “Excel Intelligent Tutoring System.” *International Journal of Academic Information Systems Research (IJAISR)* 2(2): 8 18.
28. Qwaider, S. R., et al. (2020). “Artificial Neural Network Prediction of the Academic Warning of Students in the Faculty of Engineering and Information Technology in Al Azhar University Gaza.” *International Journal of Academic Information Systems Research (IJAISR)* 4(8): 16 22.17.
29. Radwan, H. I., et al. (2022). “A Proposed Expert System for Passion Fruit Diseases.” *International Journal of Academic Engineering Research (IJAER)* 6(5): 24 33.
30. Rajesh, S., Kandaswamy, M. U., & Rakesh, M. A. (2018). The impact of Artificial Intelligence in Talent Acquisition Lifecycle of organizations: A global perspective. *International Journal of Engineering Development and Research*, 6(2), 709-717.
31. Rodgers, W., Murray, J. M., Stefanidis, A., Degbey, W. Y., & Tarba, S. Y. (2023). An artificial intelligence algorithmic approach to ethical decision-making in human resource management processes. *Human Resource Management Review*, 33(1), 100925.
32. Ryan Roslansky (2023). *Talent Management in the Age of AI, AI And Machine Learning*. Harvard Business Review, December 4, 2023
33. Saad, A. M. and S. S. Abu Na ser (2023). “Rice Classification using ANN.” *International Journal of Academic Engineering Research (IJAER)* 7(10): 32 42.19.

34. Sababa, R. Z. and S. S. Abu Naser (2024). Classification of Dates Using Deep Learning. *International Journal of Academic Information Systems Research (IJAISR)* 8(4): 18 25.20.
35. Sababa et al. (2022). A proposed expert system for strawberry diseases diagnosis. *International Journal of Engineering and Information Systems (IJEAIS)* 6(5): 52 66.
36. Sabah, A. S. and S. S. Abu Naser (2024). “Pistachio Variety Classification using Convolutional Neural Networks.” *International Journal of Academic Information Systems Research (IJAISR)* 8(4): 113119.
37. Scullion, H., Collings, D.G., Caligiuri, P., 2010. Global talent management. *J. World Bus.* 45 (2), 105–108.
38. Saxena, P., Sharma, S., & Jora, R. B. (2023, March). Impact of emotional intelligence and artificial intelligence on employee retention: A review of the service industry. In *2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS)* (Vol. 1, pp. 819-823). IEEE. <https://doi.org/10.1109/ICACCS57279.2023.10113017>
39. Sharma, P. (2026, February 6). AI and automation: Enhancing enterprise efficiency in 2026. Leena AI. <https://blog.leena.ai/ai-and-automation-enterprise-efficiency-2026/>
40. Stryker, C., & Gutowska, A. (2026). What are Agentic Workflows? IBM Think.
41. Tusquellas, N., Palau, R., & Santiago, R. (2024). Analysis of the potential of artificial intelligence for professional development and talent management: A systematic literature review. *International Journal of Information Management Data Insights*, 4(2), 100288.
42. Ume Nisa, Muhammad Shirazi, Mohamed Ali Saip, Muhammad Syafiq Mohd Pozi, Agentic AI: The age of reasoning—A review, *Journal of Automation and Intelligence*, 2025, ISSN 2949-8554, <https://doi.org/10.1016/j.jai.2025.08.003>.
43. Upadhyay, A. K., and Khandelwal, K. (2018). Applying artificial intelligence: implications for recruitment. *Strategic HR Review*, 17(5), 255–258. Van Dam, R. (2021). Predicting Employee Attrition (Doctoral dissertation, Tilburg University).
44. Yawalkar, 2019. A study of artificial intelligence and its roll in human resource management *International journal of research and Analytical Reviews*, 6 (2019), pp. 20-24. <http://www.jirar.org/papers/IJRAR 19UPP004.pdf>
45. Yuqing, Xi Zhang, Xinlin Tang, Chuan Qin, and Hengshu Zhu, 2021. Embedding fairness into the AI-Based Talent Recruitment Systems : The Perspective of Environment Cycle and Knowledge Cycle. Paper presented at the twenty-first Pacific Asia Conference on Information Systems, PACIS, Dubai, United Arab Emirates, July 12-14; p.15. [Google Scholar]