


Chapter 5

Artificial Intelligence (AI) into Talent Management

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ABSTRACT

Artificial Intelligence (AI) has transformed various areas of organizational management in the digital age (DSouza, 2019, Khan, 2024, Mahmudah, 2024). One such crucial area that is undergoing transformation is talent management (TM), a core function of human resources (HR) (Abdeldayem & Aldulaimi, 2020, Khan, 2024). Indeed, the advent of artificial intelligence (AI) technology offers previously unheard-of opportunities to transform talent management practices (Mahmudah, 2024) as it has great potential to alter the way businesses recruit, manage and retain their talent (Barredo Arrieta et al., 2020; Setyawan et al., 2024). In light of this, this chapter provides an overview of artificial intelligence definitions and the evolution of human resources management in the artificial intelligence (AI) era. Also, it addresses artificial intelligence roles, tools, and applications in talent management. In addition, it discusses benefits and challenges of integrating Artificial Intelligence into talent management practices.

INTRODUCTION

Organizations are increasingly adopting AI in human resource operations due to its substantial benefits (George & Thomas, 2019; Nawaz et al., 2024). Gartner predicts that by 2025, 60% of large companies will implement AI-based HR systems, underscoring its growing importance (Gartner, 2025). AI is being widely integrated across HR functions, especially in talent management (Hamid et al., 2023; Abdel-

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dayem & Aldulaimi, 2020; Khan, 2024). As technology evolves, its application in talent management is expanding across diverse sectors, including labor markets, SMEs, and both public and private organizations (GAO & Segumpan, 2024; Faqihi & Miah, 2023).

Talent management is an organizational strategy aimed at attracting, developing, and retaining skilled individuals to ensure long-term business success (Khan, 2024; Natarajan et al., 2024; Quilliam, 2023). It involves a set of processes focused on identifying, nurturing, and retaining talented employees who contribute significantly to organizational performance (Mahmudah, 2024). In recent years, the integration of artificial intelligence (AI) into talent management has gained prominence, with AI tools being used to optimize various stages of the employee lifecycle—from recruitment and onboarding to development and engagement (Khan, 2024).

Artificial intelligence (AI) offers numerous advantages when integrated into talent management. By leveraging AI within talent management (TM), organizations can enhance their recruitment processes—improving candidate sourcing, selection, and onboarding—which leads to better hiring outcomes and reduced time-to-fill for open positions (Davenport & Ronanki, 2018; Khan, 2024; Natarajan et al., 2024). In addition, AI-driven training and development programs can deliver personalized learning plans tailored to each employee's skills, preferences, and career goals, thereby increasing performance and engagement (Khan, 2024; Marler & Boudreau, 2017; Natarajan et al., 2024). Furthermore, the integration of AI in talent management has been shown to enhance employee engagement and productivity, support the recruitment and retention of top talent, facilitate continuous learning, optimize team formation, strengthen organizational culture, foster leadership development, and reduce employee workload (Rožman et al., 2022). As a result, advancements in talent management through AI could significantly improve organizational performance, elevate employee engagement, and lower staff turnover rates (Olaniyan et al., 2022; Mattalatta & Andriani, 2023; Yanamala, 2024).

Nevertheless, the increasing application of AI in talent management raises several ethical and privacy concerns. These include biases in automated decision-making, the potential lack of human judgment in complex situations, risks to data security, issues related to accessibility and trust, the demand for a more skilled and adaptable workforce, and the threat of job displacement (Chui et al., 2016; Khan, 2024; Natarajan et al., 2024). As such, organizations must carefully assess these implications and implement strategies to mitigate risks while maximizing the benefits of AI in talent management (Natarajan et al., 2024). By preparing their workforce to collaborate effectively with intelligent technologies, organizations can fully harness the advantages and transformative potential of AI (Nawaz et al., 2024).

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