




The impact of artificial intelligence on human resource management practices: An investigation



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Orientation: This study investigates the transformative impact of artificial intelligence (AI) technologies on traditional human resource management (HRM) practices across key industries.

Research purpose: This study aims to systematically review and analyse the literature on AI's current integration into HRM practices across industries, focusing on studies published from 2020 to 2024.

Motivation for the study: The motivation for this study was to identify both key benefits and possible limitations in the current employment of AI in HRM practices with a view to making recommendations for the optimal deployment of AI tools.

Research approach/design and method: This study utilises the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach. Data sources include Google Scholar, Scopus and ScienceDirect.

Main findings: Findings reveal that while AI tools may significantly increase the efficiency and effectiveness of the hiring process, potentially enhance the accuracy and objectivity of performance appraisals and enable the implementation of more personalised training and development initiatives, several ethical implications and challenges remain. These include potential biases within AI algorithms, concerns about data privacy and over-surveillance of employees, along with exacerbating the 'digital divide' between those with access to technology and those without. The research also notes the limitations of concrete, quantifiable, metrics available in the literature thus far, for the extent of the benefits claimed.

Practical/managerial implications: The study offers recommendations for organisations to maximise the benefits of AI while addressing its associated challenges.

Contribution/value-add: The need for robust regulatory frameworks and best practices to ensure AI's ethical deployment is clearly indicated. The findings aim to guide HR practitioners, policymakers and researchers in developing effective strategies for integrating AI into HRM practices ethically and responsibly while noting the current uncertainties regarding its concrete benefits and dangers.

Keywords: artificial intelligence technology; human resource recruitment efficiency; AI training programmes; ethical AI practices; AI regulatory frameworks.

Introduction

The advent of artificial intelligence (AI) has revolutionised various sectors, and human resource management (HRM) is no exception. Artificial intelligence technologies aim to enhance HRM functions by improving efficiency, accuracy and decision-making, fundamentally reshaping how organisations manage their human capital. The rapid integration of AI into HRM practices has enabled organisations to automate repetitive tasks, such as screening resumes and scheduling interviews, thus freeing human resource (HR) professionals to focus on more strategic initiatives (Nawaz et al., 2024). Moreover, AI's ability to analyse vast amounts of data in real time allows for more informed and data-driven decision-making processes, which could significantly improve the accuracy of performance evaluations and the personalisation of talent management strategies (Islam et al., 2022).

This study explores the current literature on the transformative impact of AI on HRM practices, focusing on three core areas: recruitment, performance evaluation and talent management. In recruitment, AI-driven tools are increasingly being used to streamline candidate sourcing, reduce time to hire and enhance the quality of hire by identifying the best-fit candidates through advanced

algorithms (Sakka et al., 2022). However, the reliance on AI in recruitment also raises concerns about the transparency of decision-making processes (Sithambaram & Tajudeen, 2023). This can, however, be balanced if its limitations in the nuances of human selection are acknowledged, so that a substantial reduction in time to hire achieved in the initial stages of the process is recognised as an opportunity to allow professionals to concentrate on the strategic aspects of recruitment, such as candidate engagement and, later, relationship building (Nawaz et al., 2024).

In the realm of performance evaluation, AI systems are being used to monitor and assess employee performance continuously, providing real-time feedback and identifying trends that might not be visible through traditional methods (Nawaz et al., 2024). While this can lead to more accurate and objective evaluations, it also poses ethical questions regarding employee surveillance and privacy (Sithambaram & Tajudeen, 2023).

Talent management, another critical area of HRM, is potentially being transformed by AI's capacity to predict employee needs, identify skill gaps and offer personalised learning and development opportunities (Islam et al., 2022). Artificial intelligence-driven insights could therefore enable organisations to create more effective career development plans and improve employee retention by aligning individual aspirations with organisational goals (Nawaz et al., 2024). However, this also introduces challenges related to the quality of machine learning and the digital divide, that is, ensuring that all employees have equal access to AI-driven resources (Sakka et al., 2022).

The ethical challenges associated with AI, including fairness, transparency and data security, are generally recognised in the literature (Islam et al., 2022; Nawaz et al., 2024). However, the extent to which these risks are keenly addressed diverges across industries. Efforts to mitigate fairness concerns have gained momentum through tools such as algorithm audits and fairness-focused toolkits. For instance, some organisations are utilising explainable AI (XAI) to detect and reduce bias in decision-making systems (Rane et al., 2023). However, many sectors face technical and operational barriers that limit comprehensive implementation, leading to inconsistencies in outcomes (Floridi, 2024; Wu, 2024).

Transparency, another critical area, has seen advances with the development of explainability frameworks for AI systems. Despite these efforts, their practical adoption is limited, especially in complex decision-making contexts, raising questions about the sufficiency of current transparency measures (Singhal et al., 2023). Regarding data security and privacy, regulatory frameworks such as the General Data Protection Regulation (GDPR) and the *EU AI Act* have established foundational guidelines for ethical AI practices. These frameworks have spurred progress in safeguarding user data in heavily regulated industries like healthcare and finance. However, sectors with less stringent oversight often

lag behind, highlighting the need for universally applied governance mechanisms (Matulionyte, 2023; Sareen, 2023).

This analysis suggests that while there is some evidence of progress in addressing these ethical risks, much of the literature emphasises their importance without detailing robust, widespread implementation. These gaps highlight the need for further research and stronger regulatory oversight to bridge the divide between theoretical frameworks and practical applications (Floridi, 2024).

Research objectives

- *To assess the impact of AI-driven recruitment tools on the efficiency and effectiveness of the hiring process in various industries.*
- *To evaluate the role of AI in enhancing the accuracy and objectivity of performance appraisals.*
- *To investigate the contribution of AI in personalising training and development programmes for employees.*
- *To analyse the ethical implications and challenges associated with the integration of AI in HRM practices, particularly in relation to biases and data privacy.*

Theoretical framework

The study is underpinned by two theories: firstly, the Technological-Organisation-Environment (TOE) framework, which adds an organisational dimension to the original Technology Acceptance Model (TAM); and, secondly, the Ability-Motivation-Opportunity (AMO) theory, which has specific relevance to HRM and which has therefore provided an appropriate conceptual framework for analysis.

The TAM, first developed by Davis (1989), is a well-established framework used to understand how users come to accept and use technology. According to TAM, two primary factors (perceived usefulness and perceived ease of use) influence an individual's decision to adopt a technology. Artificial intelligence tools, such as chatbots for recruitment, and AI-based analytics for performance evaluations are able to significantly enhance efficiency in HRM tasks. These tools provide real-time data insights, automate routine tasks and offer personalised development plans (Islam et al., 2022; Nawaz et al., 2024). Artificial intelligence-driven tools can improve the accuracy of performance assessments and streamline recruitment processes, which are perceived as valuable benefits by HR professionals. For instance, AI can reduce time to hire and increase the precision of candidate evaluations, contributing to better hiring decisions and improved talent management (Sakka et al., 2022). Thus, the perceived usefulness is evident in enhancing productivity, accuracy and strategic decision-making. The TOE framework is further able to add an understanding of the business dimension and contexts within which HRM operates. To remain competitive, organisations are currently bound to adopt AI within their HRM practices. In the TOE framework, the structure and the processes in an organisation are

understood as either constraining or encouraging the adoption and implementation of innovations, while the external environment, including others in the industry, competitors, regulations and government intervention, is also brought into consideration (Alkhalil et al., 2017, p. 4). Hoti (2015, p. 6) argues that the TOE model can be incorporated with the TAM framework because both have a strong theoretical foundation able to be used in information technology adoption. This author also notes that the TOE framework involves the environmental background making it better able to explain intra-firm innovation adoption than can TAM.

With regard to perceived ease of use, many AI tools are designed with user-friendly interfaces and intuitive features, which facilitate their integration into existing HRM practices. However, some HR professionals report a steep learning curve associated with new AI technologies and there are concerns about the complexity of managing AI systems (Sithambaram & Tajudeen, 2023). These issues are of specific concern in situations where the 'digital divide' between employees from disadvantaged and advantaged groups is a significant factor. 'Digital equity means everyone has the technology, access and skills they need to thrive' (Digital Promise, 2024). This issue is of particular concern within the continent of Africa – including South Africa. Artificial intelligence tools that offer seamless integration with existing HRM software and require minimal user intervention are more readily accepted by all HR professionals (Sakka et al., 2022). Sakka et al.'s findings underscore the relevance of the TOE and TAM frameworks in understanding HR professionals' acceptance of AI tools in HRM while opening a window to further probe the challenges posed in developing countries such as South Africa, which are particularly affected by the 'digital divide'.

The second significant theory to inform this study is the AMO theory, first developed by Appelbaum et al. in 2000. This is of specific relevance to HRM research. It is a model that seeks to explain the relationship between an individual's performance and how they are managed. The theory suggests that performance is affected by a combination of an employee's personal ability, their motivation within the workplace and the opportunities they are offered for personal development. These insights can assist organisations to optimise the performance of employees and also to retain employees by developing their abilities to succeed. Conversely, failure to take these factors into consideration will have a negative impact on HRM performance. Ability-Motivation-Opportunity is therefore an appropriate framework to underpin the specific focus of this research, that is, AI's influence on recruitment (the better identification of *ability* in potential employees), performance (which is strongly influenced by *motivation*) and talent management (which involves the provision by employers of appropriate *opportunities* for their employees to succeed).

Literature review

The use of AI in HRM has been consistently increasing, with the result that HR processes are being transformed in nearly all critical areas. The rapid advancement of AI can transform the manner in which businesses interact with their customers and employees, as well as impacting the personal lives of individual employees (Nawaz et al., 2024). Organisations and the workplace are thus being disrupted by this new technological revolution at the same time as these changes are understood to be assisting organisations globally in reducing costs and optimising time utilisation. Integrating technologies such as the Internet of Things, machine learning and AI tools into the management process as a strategic component can help to address many business challenges. However, the downside must also be recognised as AI can only function optimally when it is provided with high-quality data, and the possibility always exists that confidential documents and policies, shared by the organisations involved, can be misused (Nawaz et al., 2024).

Recruitment and talent or ability acquisition

Nawaz et al. (2024) emphasise that AI plays a significant role in HR planning by facilitating the identification of future staff requirements and enabling informed recruitment strategies. Wang and Feng (2023a) also emphasised that the use of AI-enabled recruitment and selection processes is also valuable in the attraction and selection of skilled individuals for organisations. These technologies enable the access to data, prompt decision-making and the management of substantial amounts of information within a timeframe that surpasses human expertise (Nawaz et al., 2024). Hence, AI algorithms have the potential to enhance the process of identifying prospective candidates, determining their level of interest and suitability for the position and facilitating more effective communication with the job vacancy. At the same time, enhancing job searchers' technology usage has a positive impact on their engagement in AI-powered recruitment processes (Sakka et al., 2022). This may be outside of the direct sphere of influence of hiring companies, but this value to prospective employees is likely to rapidly enhance technology usage by individuals as TAM would suggest, while it may also impact negatively on potential recruits who have limited access to AI tools.

Artificial intelligence also has the potential to overcome certain biases that may be encountered during the recruitment process, minimising human errors while delivering more precise results (Nawaz et al., 2024). Sucipto (2024) argues that organisations can more easily access competent individuals through the implementation of AI – that is, enabling the better identification of ability, which is emphasised in the AMO theory of HRM as an essential element. It can help identify the most suitable candidate from a pool of potential applicants by comparing the abilities and experiences of individuals with the job requirements. Additionally, AI can assist job seekers in locating the ideal position by promptly notifying them when a position that aligns with their

qualifications is posted online (Sakka et al., 2022). The use of talent acquisition software has facilitated the scanning, reading and assessment of applications. The findings of Nawaz et al.'s (2024) study indicate that the use of software-assisted recruitment procedures has the potential to reduce the size of the candidate pool by 75%. This feature provides a significant benefit as it enables the concentration of the evaluation process on a more limited group of qualified candidates. Such outcomes greatly enhance the efficacy and cost-effectiveness of recruitment decisions (Islam et al., 2022). Thus, technically, AI can claim to far surpass human activity in the initial selection of applicants. There are, however, associated risks, particularly associated with algorithm bias, which are discussed further in the text (Table 1).

In addition to improving efficiency and accuracy, AI technologies play a role in broadening the talent pool. Patel and Verma (2022a) emphasise that AI-powered tools extend recruitment reach by leveraging social media analytics and targeted advertisements. These tools can identify and engage passive candidates – those who may not be actively seeking new opportunities but who are open to the right offers. By analysing online behaviours and preferences, AI tools can pinpoint potential candidates who might otherwise remain unnoticed (Wang & Feng, 2023b).

The use of AI has also been found to enhance the effectiveness of the job interview process (Islam et al., 2022; Sucipto, 2024). The traditional face-to-face interview format has been replaced, particularly in the early stages of the hiring process, by Internet-based interviews, namely asynchronous video interviews (AVIs). Furthermore, the use of a hybrid decision-support tool was found to be beneficial for human resources professionals during the recruiting and placement procedures. This tool not only enhances the effectiveness of recruiters but also optimises the return on investment for the organisation (American Civil Liberties Union, n.d).

Artificial intelligence algorithms have therefore enabled the identification of appropriate candidates for job openings while simultaneously mitigating the cognitive biases associated with race, gender and sexual orientation that often influence human decision-making in recruitment processes (Biliavska et al., 2022). On the other hand, the danger of algorithms reproducing and perpetuating biases is great and has not been overcome since a famous case where Amazon had to rescind an algorithm in 2015, which discriminated

against women. 'If you simply ask software to discover other resumes that look like the resumes in a 'training' data set, reproducing the demographics of the existing workforce is virtually guaranteed' (ACLU, 2025).

Thus, AI can claim to surpass human abilities in the initial identification and selection of applicants (Hu, 2023). The need to use the additional time saved for enhancing professional HR skills in the later stages of selection is, however, also emphasised in the literature. Here originality, character and specific attributes can only be identified by human interaction (and it should be noted that some skilled candidates may also be missed in the early AI-driven stages on account of this limitation in AI-driven decisions). Patel and Verma (2022b) also caution that over-reliance on AI algorithms may inadvertently exclude high-potential candidates who do not conform to established data patterns. For example, candidates who possess unique or unconventional skill sets might not fit traditional algorithmic profiles, leading to their potential exclusion from consideration. Additionally, AI-driven systems might not capture the potential of candidates who do not fit the conventional data-driven profiles but possess exceptional qualities or innovative attributes (Herrmann, 2023).

Talent management and motivation

Biliavska et al. (2022) argue that AI could be a valuable instrument in assisting HR departments in their effort not only to attract but also to nurture the talent for the organisation. Talent management encompasses improving employees' ongoing professional growth – which assists in the motivation of individuals once recruited, as envisaged in the AMO Framework (first proposed by Bailey in 1993) for best HRM practice. Artificial intelligence can develop personalised 'onboarding' efforts for newly hired personnel (Nawaz et al., 2024), familiarising newly hired individuals with an organisation's strategic objectives, culture, management team and business model. This, in turn, has the potential to enhance retention rates (Sakka et al., 2022).

Sithambaram and Tajudeen (2023) believe that the main challenge in HR planning lies in the appropriate allocation of individuals to suitable job roles. Artificial intelligence and other automation technologies can facilitate this process. Staff members that demonstrate high levels of on-the-job efficacy, productivity and participation contribute significantly to the overall success of an organisation, while

TABLE 1: Objective 1 – Impact of artificial intelligence-driven recruitment tools on the efficiency and effectiveness of the hiring process (quantifiable evidence).

Authors	Title	Year	Aim/purpose	Methodology	Findings
Mukherjee and Krishnan	Impact of AI on aiding employee recruitment and selection process.	2022	To investigate the impact of AI on fast-tracking employee recruitment and selection	Quantitative analysis, deductive approach	76% of the respondents agree that AI plays a major role in hiring
Prabhakar	Role of new emerging technologies in recruitment and selection process.	2023	To investigate the role of AI in the recruitment process.	Survey	86% agreed that AI has made recruitment and selection efficient and cost effective.
Chen	Collaboration among recruiters and artificial intelligence: Removing human prejudices in employment.	2023	Role AI plays in recruitment, job search, screening and coordination.	Survey and semi-structured interviews	68% agreed that AI recruitment tools provide specific advantages.

Note: Please see the full reference of this article Skinner, J.P., Ncube, T.R., & Sishi, K.K. (2025). The impact of artificial intelligence on human resource management practices: An investigation. *SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur*, 23(0), a2960. <https://doi.org/10.4102/sajhrm.v23i0.2960> for more information. AI, artificial intelligence.

the evaluation of these variables from the perspective of the organisation poses challenges because of the limitations of standard success measurements, which are frequently overly simplistic. The use of AI has the potential to improve the level of precision in performance evaluation (Sithambaram & Tajudeen, 2023). One of the primary strategies for enhancing work performance is the development of a work plan that outlines objectives and incorporates designated timeframes for achieving outcomes. The precision of the data used for employee performance assessments can be enhanced continuously and in real time, instead of only aligning performance with targets at the beginning and conclusion of a designated period (Nawaz et al., 2024) – although overly close surveillance, which could inhibit employee motivation, is a factor to be considered here.

The implementation of AI can also enable enhanced analysis of remuneration data, leading to an improved perception of organisational efficiency (and further motivation for employees to ensure equity). This, in turn, would contribute to the motivation of individual employees. Zhang and Li (2021) support these conclusions, pointing out that these systems can analyse extensive datasets, including metrics related to employee output, collaboration and customer feedback. By leveraging real-time data, AI-driven systems present a more dynamic and current view of employee performance (Table 2). Another advantage of AI is its potential to minimise personal biases. Traditional performance reviews are prone to subjective assessments influenced by personal

relationships and cognitive biases (Zhang & Li 2021). Artificial intelligence systems in analysing large volumes of data, including employee performance metrics, peer reviews and customer feedback, can generate a more objective assessment of performance, ensuring that evaluations are based on actual performance indicators rather than personal opinions. Recent research by Roberts et al. (2023) supports these conclusions while also highlighting associated challenges. While AI therefore excels in analysing quantifiable metrics, there is a risk of neglecting qualitative aspects of performance. For example, AI systems may focus on measurable outputs, such as productivity metrics, while overlooking factors like creativity, teamwork and employee morale. This narrow focus may lead to an incomplete assessment of an employee's overall contributions and value to the organisation, again pointing to the continuing need for the involvement of personal HRM expertise.

Training and development opportunity enhancement

Continuous training is of utmost importance to stay up-to-date with the rapid advancements in technology (Sithambaram & Tajudeen, 2023). Artificial intelligence is able to facilitate the scheduling, arranging and coordination of virtual training activities, including online courses and remote classrooms. In addition to its logistical functions, AI can assume a more prominent role in the allocation of personnel to customised training initiatives, considering their individual requirements (Table 3). Research indicates

TABLE 2: Objective 2 – The role of artificial intelligence in enhancing the accuracy and objectivity of performance appraisals (quantifiable evidence).

Authors	Title	Year	Aim/purpose	Methodology	Findings
Alrashedi and Abbod	The effect of using artificial intelligence on performance of appraisal system: A case study for University of Jeddah Staff in Saudi Arabia.	2021	Clarifies importance of using AI in enhancing performance appraisals.	Quantitative – Quantitative	68% agreed that AI can improve the accuracy and objectivity of performance appraisals.
Dahake, Chandak and Dahake	Predictive analytics in performance appraisal systems: Enhancing objectivity and fairness.	2024	The study investigates the potential of predictive analytics models to mitigate biases, improve accuracy and promote objectivity in performance evaluation.	Quantitative – Questionnaire	75% of the employee agreed that AI plays a role in enhancing accuracy of performance appraisals.
Eliza	Human Resource Management Strategies to Improve Performance in the Digital Era.	2023	To investigate implementation of digital technology in various HR processes, including automation of administrative tasks, technology-based recruiting and performance management.	Quantitative	Organisations that have integrated AI into their performance management systems have experienced a 45% improvement in staff productivity.

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TABLE 3: Objective 3 – Contribution of artificial intelligence in personalising training and development programmes for employees (quantifiable evidence).

Authors	Title	Year	Aim/purpose	Methodology	Findings
Alkhatir Danish, Zainaldeen, Bukhowa, Alghamdi, Soni, Abbas and Alhalwachi	The impact of multinational enterprises on organisational performance: A study on training and development practices in Bahrain	2024	To investigate the impact of multinational organisations performance regarding training and development	Quantitative, deductive analysis	79% said that they preferred AI-driven training techniques over traditional approaches
Sucharita and Seethalakshmi	Artificial intelligence in training and development for employees with reference to selected it companies	2022	To investigate artificial intelligence and development for employees at selected companies	Quantitative – deductive analysis	80% of the respondents agreed that AI has the capacity to offer employees personalised guidance on career development.
Jaiswal, Arun and Varma	Rebooting employees: Upskilling for artificial intelligence in multinational corporations	2023	To determine the key skills deemed critical for the upskilling of employees	Quantitative	90% indicated that there is contribution of AI in training and development

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that the average employee has a limited amount of time available for engaging in ongoing professional development. Consequently, the efficient utilisation of this time is important. Employee databases can direct employees to suitable training opportunities as they contain information regarding the specific competencies and expertise of individual employees (Islam et al., 2022). Furthermore, these databases can be accessed to monitor the effects of training on an employee's subsequent performance within the organisation. Finally, AI has the potential to enhance talent retention by enabling proactive responses to the needs of staff members (Tambe et al., 2019). Artificial intelligence can also provide employees with virtual personal advisers who are tailored to their specific requirements (Table 3). Utilising AI-enabled tools to design training and development opportunities should aid in improving job satisfaction and, thus in staff retention, as suggested by the AMO theory.

According to Prikshat et al. (2023), the personalised approach offered by AI also contributes to higher engagement levels among employees. By catering to individual learning preferences and career aspirations, AI-powered training platforms can make learning more relevant and engaging. Employees are more likely to invest time and effort into training when they perceive it as directly beneficial to their personal and professional development (Gorowara et al., 2024). Moreover, the customised feedback and recommendations mean that employees receive targeted advice and support that helps them overcome specific challenges (Table 3). This should enable them to build on their strengths, leading, it is argued, to more substantial and measurable improvements in their skills and performance (Kaushal et al., 2023).

Despite the advantages claimed for AI in training, there are significant concerns related to the digital divide. As noted by O'Neill and Green (2021), employees with lower digital literacy may face difficulties navigating AI-powered training platforms. This can exacerbate existing skill gaps within the workforce, as those who struggle with technology may not fully benefit from the personalised learning opportunities that AI offers. To address this issue, organisations would be able to implement additional support mechanisms, such as training sessions on digital

literacy, or provide alternative resources for employees who may need extra assistance. According to Singh and Kumar (2022), ensuring that all employees have equitable access to AI-driven training tools may be necessary for maximising the overall effectiveness of personalised learning initiatives.

Another cautionary consideration, not often considered, was identified by Zhai and Wibowo (2023) on the effects of over-reliance on AI systems on students' cognitive systems. This research found that there exists a significant risk of human beings becoming overly dependent on AI in decision-making. This could hinder creativity and innovative thinking among both educators and students, thereby degrading educational quality. These authors assert that excessive dependence on AI systems impedes students' development of critical thinking and problem-solving skills. In addition, the provision of preformulated responses by AI dialogue systems may restrict a student's capacity to express their individual opinions and perspectives. The presence of AI hallucinations, plagiarism, lack of transparency and algorithmic biases raises a significant concern around decision-making. Policymakers and practitioners therefore advocate for greater human oversight, namely requiring managers to carefully evaluate AI suggestions prior to final decision-making.

Implications regarding ethics

The research mentioned earlier in the text already suggests that integration of AI into HRM practices has several ethical implications and brings challenges, primarily concerning biases and data privacy (Table 4). Recent research underscores the complexity of these issues and the need for vigilant oversight to mitigate potential risks. Nguyen and Tran (2023) explore the dual-edged nature of AI in HRM, particularly regarding bias. As noted earlier in the text, AI has the potential to reduce human bias by standardising decision-making processes and minimising subjective judgements. However, these authors caution that AI systems can also perpetuate or amplify existing biases. Rodgers et al. (2023) emphasised that this issue arises because AI algorithms often rely on historical data, which may include inherent biases. For example:

TABLE 4: Objective 4 – Ethical implications and challenges associated with the integration of artificial intelligence in human resource management practices (quantifiable evidence of measures taken).

Authors	Title	Year	Aim/purpose	Methodology	Findings
Kalischko and Riedl	Electronic performance monitoring in the digital workplace: Conceptualisation, review of effects and moderators and future research opportunities.	2021	To investigate the effect of electronic performance monitoring in the workplace	Desktop – literature search	54% of workers believe that their privacy is violated at work.
Hu	Unilever's practice on AI-based recruitment.	2023	The effects of AI-based recruitment on the company	Case analysis method	16% increase in diversity within their shortlisted candidates.
Bankins	The ethical use of artificial intelligence in human resource management: A decision-making framework.	2021	To assess the ethical use of AI in HRM	Case study analysis	Deus Tech increased production by 30% while drastically cutting operating costs after implementing AI-driven robotic systems, but this also involved job losses for 200 workers.

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- **Training Data Bias:** If AI systems are based on data that reflect past discriminatory practices or biased decisions, these biases can be embedded in later AI's decision-making processes. As noted earlier in the text, this can lead to discriminatory outcomes in hiring, promotions and performance evaluations, undermining the fairness of HRM practices.
- **Algorithmic Bias:** Algorithms can inadvertently prioritise certain characteristics or patterns that reinforce existing bias. For instance, an AI recruitment tool may favour candidates from specific educational backgrounds or geographic locations if these criteria have been historically associated with higher success rates, thus marginalising diverse talent pools.

Nguyen and Tran (2023) also emphasise the importance of ongoing monitoring and refinement of AI algorithms to identify and correct biases. Implementing fairness-aware algorithms and involving diverse teams in the design and evaluation of AI systems can help address these challenges. Harris and Johnson (2024) highlight another critical ethical concern: data privacy. Artificial intelligence systems in HRM often require large volumes of personal data to function effectively, including sensitive information about employees. The use of such data raises several privacy issues:

- **Data Security:** The storage and processing of vast amounts of personal data increase the risk of data breaches and unauthorised access.
- **Misuse of Data:** There is a risk that personal data could be misused, either internally by unauthorised personnel or externally if data are shared with third parties. This misuse can lead to privacy violations and a loss of trust among employees.

Transparency and consent

Employees have the right to understand how their data are being used and to provide informed consent. Harris and Johnson (2024) argue for greater transparency in AI processes, allowing employees to know how decisions affecting them are made and ensuring they have control over their personal information. To address these concerns, Harris and Johnson (2024) recommend implementing robust data governance frameworks that include clear policies on data collection, storage and usage.

It therefore appears that the ethical challenges associated with AI integration in HRM practices are multifaceted and require a balanced approach in order to address them appropriately.

Government regulation

South Africa presently lacks legislation, regulation or government policy governing the ethical utilisation of AI, and there is a lack of legal literature on the subject. Upon examining South Africa's constitutional provisions regarding human rights in relation to the fundamental

principles for regulating AI, it is evident that the majority of these values are contained within the *Constitution* of the Republic of South Africa, 1996. The provision on 'respect for human rights' is articulated in sections 1 and 7 of the *Constitution*. Section 1 additionally implements the principles of 'transparency' and 'accountability'. The concept of 'privacy and data governance' is articulated in section 14. The principle of 'rule of law' is articulated in sections 1 and 2, while the principles of 'non-discrimination and fairness' are delineated in sections 1, 9 and 10. The value of 'freedom and autonomy' is stated in sections 12, 13 and 16, while 'dignity' is articulated in section 10 (Constitution of the Republic of South Africa, 1996). Each of these has relevance for the use of personal information, not to mention the more recent *POPI Act (Protection of Personal Information)* discussed below.

Several legislative measures currently facilitate and/or promote the use of AI (European Parliament and Council, 2024). An example is the *Electronic Communications and Transactions Act 52 (ECT Act)*, which stipulates that an automated transaction is an electronically executed transaction wherein one or both parties use automated systems (specifically, a software programme that interacts with or responds to third parties without human intervention). This is now legally permitted to establish contracts and fulfil responsibilities under existing contracts.

In addition, from a compliance point of view, businesses in South Africa are required to first ensure that their AI systems adhere to the *Protection of Personal Information Act, 2013 (POPIA)*. Section 71(1) of *POPIA*, which regulates automated decision-making is crucial for AI systems because of their inherent problem-solving capabilities. This section protects data subjects from decisions that rely exclusively on automated decision-making, leading to legal consequences and profiling of the data subject. Organisations implementing an AI system will be required to consider section 57(1)(a) of *POPIA*, which requires that a responsible party obtain prior authorisation from the Information Regulator in planning to process any unique identifiers of data subjects (1) for purposes other than those for which they were collected and (2) with the intent of correlating the information with data processed by other responsible parties (Mtuzze & Morige, 2024).

Prevalent themes which emerge from the literature

A scan of current literature in the field therefore points to the following recurring themes in the evaluation of AI's involvement in HRM:

Accuracy

This is achieved by substituting AI for the time-consuming and repetitive duties of the HR team all of which are subject to human error.

Automation

HR professionals are responsible for a multitude of administrative tasks that are essential but may now become redundant. These include: job posting, sourcing, screening, arranging interviews and meetings, preparing schedules and timesheets and recording and verifying accounts, which can be fragmented into discrete responsibilities and delivered via AI automation. If AI can automate these duties, the HR professionals will be relieved of these routine tasks and will be able to allocate more time to strategic and creative decision-making and planning (Nawaz et al., 2024), while, of course, the potential for substantial job losses should also be recognised.

Time saving and costs reduction

One of the primary advantages of incorporating AI into HR is the potential for cost reduction. Artificial intelligence-powered tools have enabled organisations to model detailed cost analyses, including salary benchmarks, onboarding expenses, training costs and deployment costs. For example, AI-driven talent intelligence platforms provide insights that allow HR professionals to make data-driven decisions, leading to significant reductions in recruitment costs. Research reports indicate that organisations using AI to optimise hiring strategies have observed cost-per-hire reductions by up to 30% and faster hiring timelines, particularly in sectors heavily reliant on skilled labour (Nawaz et al., 2024).

Personalisation

Pan and Froese (2023) explain that AI possesses the ability to detect, examine, analyse and function in a manner that is designed to optimise insights into individual needs and performance without the danger of human error. Organisations are employing chatbots to offer personalised support and instructions to applicants and employees in accordance with their needs. Traditional pay and benefits systems are also being replaced with customised packages to align with the objectives of both the organisation and the individual. HR professionals, along with AI, can implement compensation systems that are both personalised and flexible (Nawaz et al., 2024). Thus, AI has the potential to enhance employee engagement and reduce staff turnover by improving employee satisfaction with pay and benefits, always provided that the data supplied and the algorithms developed are of optimal quality.

Challenges

While there are many significant ethical challenges involved in the adoption of AI systems, particularly around privacy and potential bias, and thus possible discrimination as regards groups or individuals, there is currently no specific legislation in South Africa equivalent to that in the European Union, which regulates AI usage. The *AI Act* (Regulation (EU) 2024/1689) lays down harmonised rules on artificial intelligence and is the first comprehensive legal framework on AI worldwide. However, the South African Constitution and the more recent *POPI Act* could be called upon to prevent many of the potential abuses.

Research methodology

This study employs a systematic review methodology to explore the impact of AI technologies on HRM practices. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology was used to guide the review process to ensure comprehensive and transparent reporting. A literature search including electronic databases such as Google Scholar, Scopus and ScienceDirect was conducted to identify relevant studies published from January 2020 to August 2024, as convenient delimitations.

The search used a combination of keywords and phrases related to AI and HRM, including 'artificial intelligence', 'HRM', 'recruitment', 'performance evaluation', 'talent management', 'AI tools in HRM', 'AI adoption' and 'AI challenges in HRM'. Studies were included if they focused on AI technologies in HRM practices, such as recruitment, performance evaluation and talent management. Eligible studies had to be published between January 2020 and August 2024 and provide empirical data or insights into AI applications in HRM. A comprehensive search initially identified 479 references. After removing 51 duplicate records, 428 records remained for screening. The initial screening process involved reviewing titles and abstracts to assess relevance based on predefined criteria. Studies were excluded if they did not specifically address AI in HRM practices, were not published within the specified date range or lacked empirical evidence. As a result, 300 records were excluded. Full texts of remaining 128 studies were then assessed for eligibility, leading to the exclusion of 77 full-text articles that did not meet the required focus, methodological rigour or relevance to the research questions. Ultimately, 51 studies were included in the final analysis.

Key data were extracted from these eligible studies using a standardised data extraction form to ensure consistency and accuracy. Extracted information included study characteristics (such as design, sample size and industry context), details regarding the AI tools and applications examined and findings related to recruitment, performance evaluation and talent management. Additionally, data were categorised by the type of AI tool used, impacts (of AI) on HRM practices, the challenges encountered, and ethical considerations raised.

The extracted data were then analysed and synthesised to identify patterns, trends and insights into the impact of AI on HRM practices. A comparative analysis across different industries was conducted to understand variations in AI adoption and effectiveness, ultimately enabling robust conclusions regarding the overall benefits, challenges and ethical implications of AI in HRM.

Ethical considerations

This article does not contain any studies involving animals or human participants performed by any of the authors.

Findings

While the literature review encompassed an overview of the whole range of articles identified as falling within the criteria set and specifically within the conceptual framework selected, the 'findings' were restricted to those studies that could be shown to provide concrete, quantifiable, results of the adoption of AI processes by businesses and of the benefits or challenges resulting from this. Thus, where only 'potential' advantages or disadvantages were identified as results of the research, these articles were excluded. It was noticeable how significantly reduced this data set then became. Only nine articles could be identified as offering quantifiable findings, and most of these are also opinion based. Only two articles (Bankins, 2021; Eliza, 2023) provided numerical evidence of improvement. Morandini et al. (2023) found there was a 45% increase in employee productivity where AI had been introduced into performance management systems, while Bankins's research established that a single car manufacturing company increased production by 30% after the introduction of AI techniques. However, this last example also involved significant job losses.

There appears to be strong, but not overwhelming, agreement that AI is a valuable aid in recruitment across a broad range of industries, especially of 'hard' (quantifiable) skills. Evidence of the extent of improvement as a direct result of the introduction of AI is, however, hard to find.

The improvement is because of AI algorithms that deliver personalised feedback, recognise patterns in employee performance and furnish insights for improved decision-making. One article (Eliza, 2023) concluded that a 45% improvement in productivity had been achieved.

Again, there appears to be strong agreement that AI is a valuable aid in training across a broad range of industries, but again specific quantifiable metrics are lacking.

The Michigan-based car manufacturer Deus Tech came to represent both hope and despair in regard to AI-enhanced manufacturing practices and their ethical implications. According to Bankins (2021), Deus Tech increased production by 30% while drastically cutting operating costs after implementing AI-driven robotic systems to improve manufacturing efficiency. However, almost 200 workers were laid off as a result of the automation shift, raising questions about the future of human jobs in a world that is becoming more and more automated (Van Laar et al., 2020). This research also found that employee trust and engagement increase by 25% in companies with strong ethical frameworks, demonstrating the real advantages of using AI responsibly.

Recommendations

- To address these challenges, it is essential for organisations to strike a balance between leveraging AI-driven tools and maintaining human oversight in each of their processes. Integrating AI with human judgement ensures

that the benefits of automation are maximised while mitigating the risk of overlooking more nuanced decisions, suggesting that HR professionals should use AI as a complementary tool rather than a replacement for human intuition and expertise.

- **Implement fairness-aware artificial intelligence systems:** Organisations should prioritise the development and deployment of AI systems that incorporate fairness-aware algorithms. Regular audits and updates should be conducted to identify and mitigate biases in AI tools. Involving diverse teams in the design and evaluation phases can help ensure that AI systems are equitable and inclusive.
- **Strengthen data privacy protections:** To address data privacy concerns, organisations must establish and adhere to robust data governance frameworks. This includes implementing stringent security measures to protect personal data, ensuring transparency about data usage, and obtaining informed consent from employees. Compliance with data protection regulations such as the GDPR should be strictly observed.
- **Promote transparency and employee engagement:** Organisations should foster transparency in AI processes by clearly communicating how AI systems are used in HRM practices. Providing employees with information about how their data are used and how decisions are made can enhance trust and engagement. Additionally, involving employees in discussions about AI deployment can help address concerns and improve acceptance.
- **Develop ethical guidelines and best practices:** Establishing comprehensive ethical guidelines and best practices for AI in HRM. Organisations should develop frameworks that address issues of fairness, transparency and accountability. Regular training for HR professionals on ethical AI usage and decision-making should be provided to ensure responsible implementation of AI technologies.
- **Foster continuous learning and adaptation:** The field of AI is rapidly evolving, and organisations must remain adaptable to emerging trends and technologies. Investing in continuous learning and professional development for HR professionals will help them stay informed about the latest advances and best practices in AI. As with recruitment practices, organisations should focus on balancing AI-driven personalisation with human oversight – human trainers and mentors play a vital role in offering support and addressing nuanced needs that AI may not fully capture. This proactive approach will enable organisations to effectively harness AI's potential while addressing its challenges, including a ban on the active promotion of unethical practices in cases where this may be profitable to the company concerned.

By following these recommendations, organisations can leverage AI to enhance HRM practices while addressing ethical considerations, thereby creating a more efficient, fair and transparent HR environment.

Conclusion

While many of the benefits, savings and efficiencies associated with the introduction of AI into HRM practices are becoming increasingly appreciated by businesses across the spectrum of industry sectors, and their rapid introduction is reflected in detail in the literature that has been examined here – the research also provides a note of caution against too quick an assumption that all of these ‘potential’ benefits will be achieved. The concrete evidence for the projected benefits appears to remain limited as yet. This may simply reflect the fact that the recent onset of the adoption of AI in HRM has not provided time for more detailed and quantified research and assessment – however, at the time of writing, we await further confirmation of benefits in the form of quantifiable statistics. The literature also reflects an awareness of the ethical challenges that AI introduces, particularly around possible bias and privacy issues, but the extent of efforts made to ensure that these are recognised and eliminated by companies is, as yet, also largely absent from the literature, while new dangers of unethical behaviour have been recognised. It may therefore be concluded that the successes and challenges associated with the extensive introduction of AI into HRM practices should be viewed as a dynamic field of investigation and ‘work in progress’ rather than a field from which final conclusions may be drawn.

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Authors’ contributions

J.P.S. conducted the formal analysis, investigation, project administration, writing in terms of reviewing and editing as well as the research supervision. T.R.N. conceptualised the study, implemented the methodology, conducted the formal analysis and wrote the original draft. T.R.N. aided J.P.S. with project administration, conducted the validation, data curation, resource gathering and supervised. K.K.S. did the investigation, wrote the original draft, reviewed and edited prior to submission.

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Data availability

The data that support the findings of this study are available from the corresponding author, J.P.S., upon reasonable request.

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