



# From Automation to Augmentation: A Bibliometric and Thematic Review of Artificial Intelligence in Human Resource Management

Tilak Ch Das<sup>1\*</sup>, Aparajita Neog<sup>1</sup>, Md Ruhul Amin<sup>2</sup>, Fojail Ahmed<sup>1</sup>

<sup>1</sup>Department of Commerce, Gauhati University, Guwahati, Assam, India, <sup>2</sup>NEF College, Guwahati, Assam, India.

\*Email: [luitporiyatilak@gmail.com](mailto:luitporiyatilak@gmail.com)

Received: 13 December 2025

Accepted: 29 March 2026

DOI: <https://doi.org/10.32479/irmm.23035>

## ABSTRACT

This study reviews how artificial intelligence (AI) has been applied in Human Resource Management (HRM) research from 2019 to 2024. Using a systematic search procedure outlined by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), eighty-five peer-reviewed articles were located and content analyzed using bibliometric mapping techniques in VOSviewer to identify publication trends, influence by key authors, and key topics. This study concentrates upon three primary HRM domains that demonstrate the greatest visibility of AI applications: Recruitment and selection, performance appraisals, and employee training/learning and development. Overall, the literature demonstrates positive outcomes in the form of decision-making support, increased efficiencies, and greater analytic capabilities, as well as an increasing trend from automation to augmentation, in which AI supports rather than supplants human judgment. However, the literature identifies consistent concerns about risks associated with AI including; risk of algorithmic bias, risk of compromising data privacy, lack of transparency and accountability in high-stake HR decision making processes. Recent studies have highlighted the importance of developing Explainable AI, human-AI collaboration and developing more adaptive and personalized employee experiences. Through the combination of bibliometric analysis with thematic synthesis, this study identifies the current state of research on the relationship between AI and HRM, and provides direction regarding priority gaps that need to be addressed in order for the effective and ethically appropriate application of AI in HRM.

**Keywords:** Automation, Augmentation, Artificial Intelligence, Human Resource Management, HR Functions, HR Processes

**JEL Classifications:** M120, M100, M0

## 1. INTRODUCTION

Artificial intelligence (AI) is increasingly utilized across contemporary enterprises as a means to improve efficiency and enhance operational performance. Organizations face persistent challenges related to rising operational costs, productivity constraints, inefficient resource utilization, and limitations in traditional management practices, which have accelerated interest in AI-enabled decision support and automation tools (Malik et al., 2021; Chowdhury et al., 2022; Tschang and Almirall, 2021). Examples of digital technologies increasingly adopted within organizations include IoT-enabled systems, virtual assistants, and cloud-based platforms that support coordination and information processing across functions (Qamar et al., 2021; Dima et al., 2024; Popo-Olaniyani et al., 2022).

Although AI has made tremendous advancements technologically, technology can never replace the value, judgement and ethical responsibility of a highly skilled work force. Organizations recognize the importance of managing their Human Resources effectively and therefore, the integration of AI in human resource management (HRM) has become a key managerial function in both traditional and modern organizational environments. As HRM has evolved and integrated AI into its operations, there are now new opportunities but also significant managerial, ethical and governance challenges created by the adoption of AI in all areas of HRM including talent acquisition, training and development, performance management, rewards administration and employee retention.

The emergence of AI represents a paradigmatic shift in HRM as it transforms the discipline from one that provides administrative support to one that is more analytical and decision oriented. AI applications enable HR Professionals to complete tasks faster and more accurately while providing data driven insights to HR managers who make decisions based on those insights. For example, predictive analytics enables organizations to analyze historical employee data, identify behavioural trends and provide HR managers with the ability to make more informed and proactive HR decisions (Mushtaq et al., 2024). In other words, rather than merely automating routine tasks, AI increasingly serves to augment human decision-making and extend cognitive capabilities, supporting more complex organizational work (Tschang and Amirall, 2021).

AI has been especially significant in all aspects of recruitment and the entire process of acquiring talent as well. Using AI based systems will allow companies to quickly screen and assess hundreds of applicant's resumes, conduct preliminary interviews and assessments, create a fit between a job and the candidate's qualifications and experience, and assess whether they share the same values as the company. There is no doubt that using AI in recruitment and the entire hiring process is much faster and also creates better consistency in making decisions about who to hire. AI is also being used in performance management. AI-enabled HR systems are increasingly being used to support managers in continuously monitoring employee performance, providing timely feedback, informing personalised professional development plans, and strengthening data-driven standards for performance evaluation (Dima et al., 2024; Rasheed et al., 2024; Johnson et al., 2022). This type of development indicates a movement from simply automating basic tasks in HR to augmenting decisions made by humans using AI.

There are significant obstacles that will occur as a result of HRM increasing its reliance upon AI. These include large volumes of employee data being required by AI systems that bring into question the adequacy of the data's protection, confidentiality and privacy. In addition, there is a potential for biased hiring decisions or inaccurate performance evaluations if an organization uses outdated or biased data sets to create the algorithms that are used by the organization. These issues present a number of serious concerns with respect to the application of AI in HRM. The concerns include the development of transparent and accountable AI systems that provide additional support to human judgment rather than replacing it.

This study examines the evolving role of artificial intelligence (AI) within human resource management (HRM), with particular attention to the shift from its early use as a tool for automating routine and repetitive HR tasks toward a more strategic role in supporting decision-making and governance-oriented HR functions. Using a combination of bibliometric analysis and systematic review, the study analyses 85 peer-reviewed journal articles to identify dominant research trends, key thematic developments, and underexplored areas in the AI-HRM literature. While prior bibliometric work has mapped the broader AI-HRM landscape across multiple HR functions (Kaushal et al., 2023),

the present review narrows its focus to the 2019-2024 period in order to capture more recent scholarly attention to decision augmentation, explainable AI, and the ethical and governance challenges associated with AI adoption in HR contexts. Ultimately, this research aims to support organisations in integrating AI into HR practices in a manner that enhances strategic effectiveness while remaining attentive to issues of accountability, transparency, and responsible use (Lu et al., 2023; Mamatha et al., 2023). More broadly, the study contributes to ongoing debates on how AI systems and human judgement can be combined to inform future HR policies that promote employee engagement and sustainable organisational performance.

### 1.1. Research Objectives

The objectives of the study are:

- To examine the current state of AI's impact on human resource management functions and processes.
- To evaluate the role of AI across key HR functions, including recruitment, performance evaluation, and employee development.
- To analyse the evolving role of HR professionals in the context of AI adoption, with particular emphasis on ethical and privacy implications.

### 1.2. Research Questions

The research questions guiding this study are:

- How has AI transformed HRM processes and functions?
- What role does AI play in recruitment, selection, and talent acquisition?
- In what ways can AI support and manage employee development?

## 2. REVIEW METHODS

This paper utilized a systematic review methodology based upon the preferred reporting items for systematic reviews and meta-analyses (PRISMA) framework to investigate how artificial intelligence (AI) has been integrated into human resource management (HRM). For this purpose, the Scopus database was selected as the primary data source since it offers very large numbers of peer-reviewed scholarly articles that are published across disciplines of management, social science and interdisciplinary research areas.

### 2.1. Search Strategy

To develop a structured search strategy, the following key terms have been employed: "AI in HRM," "HR functions," "HR recruitment," "Employee Development" and so on. These have been used in various Boolean combinations to maximize the potential for the systematic identification of relevant studies in this area. The search was limited to papers published between January 2019 and December 2024, in order to include most recently published studies examining AI- driven HRM research.

#### 2.1.1. Screening process

The screening process involved several phases. In Phase One, the title and abstract of each identified study was examined to determine whether the article was relevant to the subject matter of the study

and therefore aligned with its specified inclusion/exclusion criteria. At this stage, articles that did not appear to be related to the use of AI within HRM were removed. In the second phase of the screening process, full-text versions of remaining articles were screened to verify the relevance of their methodological approaches and themes relative to the topic of AI and HRM. As a result of these two phases of screening, a total of 85 studies were ultimately included in the final systematic review. A summary of the entire screening and selection process can be viewed in the PRISMA Flow Diagram (Figure 1). Although the reference list includes additional sources cited for conceptual framing, only the 85 studies meeting the PRISMA inclusion criteria were analysed quantitatively.

## 2.2. Inclusion Criteria

For a study to be included in this review, it had to meet the following conditions:

1. Published between 2019 and 2024;
2. Peer-reviewed research articles utilizing qualitative, quantitative or mixed-methods research methodologies;
3. Explicitly focused on AI applications in Human Resource Management (e.g., Recruitment, Performance Management, Employee Development).

These conditions were intended to provide a balance between relevance and methodological rigor, while allowing for a variety of theoretical and empirical studies in the AI-HRM literature to be considered.

Table 1 indicates that the selected studies are largely concentrated within a few well-established academic publishers. This reflects the dominance of reputed publishing houses in disseminating research in the area, ensuring the overall quality and credibility of the reviewed literature, with limited representation from other sources.

## 3. BIBLIOGRAPHIC OVERVIEW AND DESCRIPTIVE ANALYSIS

This section will present a bibliographic overview based upon data from research on artificial intelligence in human resource management, describing the trends and author-based networks of publications. While this bibliographic overview does not represent a complete bibliographic evaluation of the performance of the literature, it provides a framework for structuring the analysis of the research and serves as a basis for the thematic synthesis of the narrative presented in the next part of the report.

Figures 2 (network visualization), Figure 3 (overlay visualization) and Figure 4 (density visualization) demonstrate the extent to which AI-HRM research is taking shape as an emergent yet fragmented research community.

These figures collectively show that AI-HRM research is forming through the interactions between several, interrelated clusters of scholars. The visualization in Figure 2 displays journal impact levels, where colours shift from blue (representing lower impact) to green (moderate impact) and yellow (higher impact). Figure 3 maps the co-citation patterns, revealing which journals have the

strongest research linkages within the field. Figure 4 illustrates the density of research activity, highlighting areas where publications and keywords are most concentrated. The visualization indicates clusters associated with frequently occurring authors and topics, reflecting patterns of publication intensity and co-occurrence within the dataset

Overall, the network and density visualizations collectively reinforce that AI-HRM research is developing in terms of clustered scholarly communities, as opposed to isolated individual studies.

The collective nature of AI-HRM research, as demonstrated in the three figures, reinforces the necessity of conducting a thematic synthesis that considers the integration of findings from across different functions and research streams, as described below.

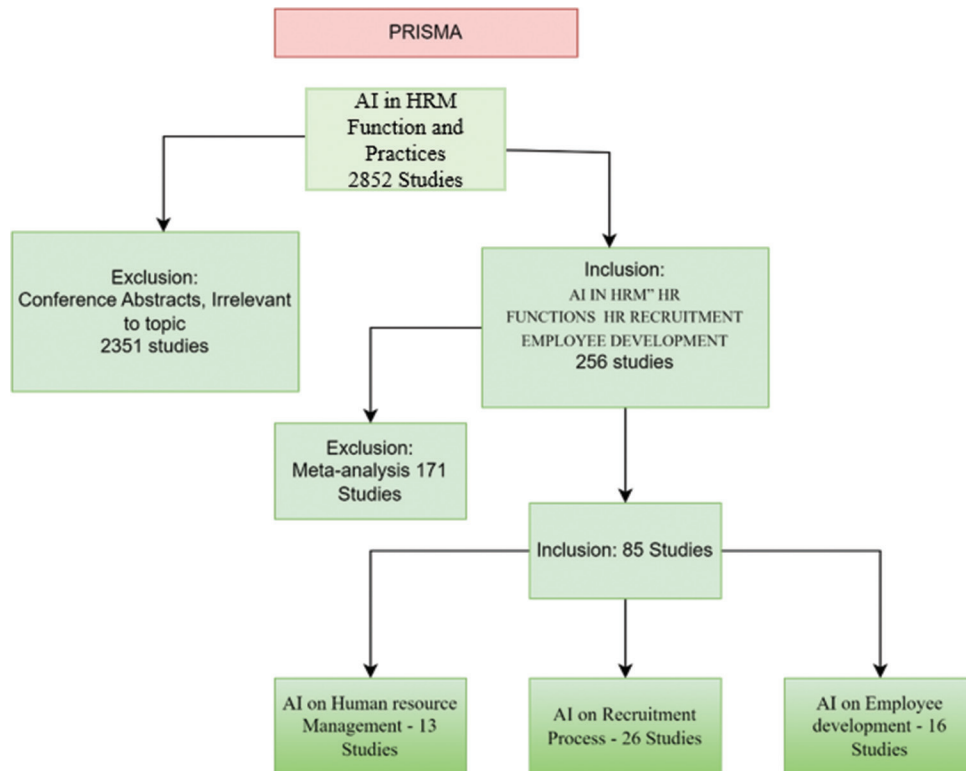
## 4. IMPACT OF ARTIFICIAL INTELLIGENCE ON PERFORMANCE MANAGEMENT AND CORE HRM FUNCTIONS

Traditionally, performance evaluation has been viewed as one of the most time-consuming and judgment-based HRM activities. In addition to the extensive amounts of time managers devote to evaluating their employees, early data also indicated that the evaluation process had little-to-no value for either the manager or employee involved in the process. Mueller-Hanson (2015) noted, as reported by the corporate executive board (CEB), that managers spend an average of 210 h/year on performance management alone. This recent work by Chukwuka and Dibie (2024) also states that businesses around the world spend tens of thousands of man hours per year manually evaluating employee performance. This large expenditure of man hours can create inefficiencies and inconsistencies in how employees are evaluated.

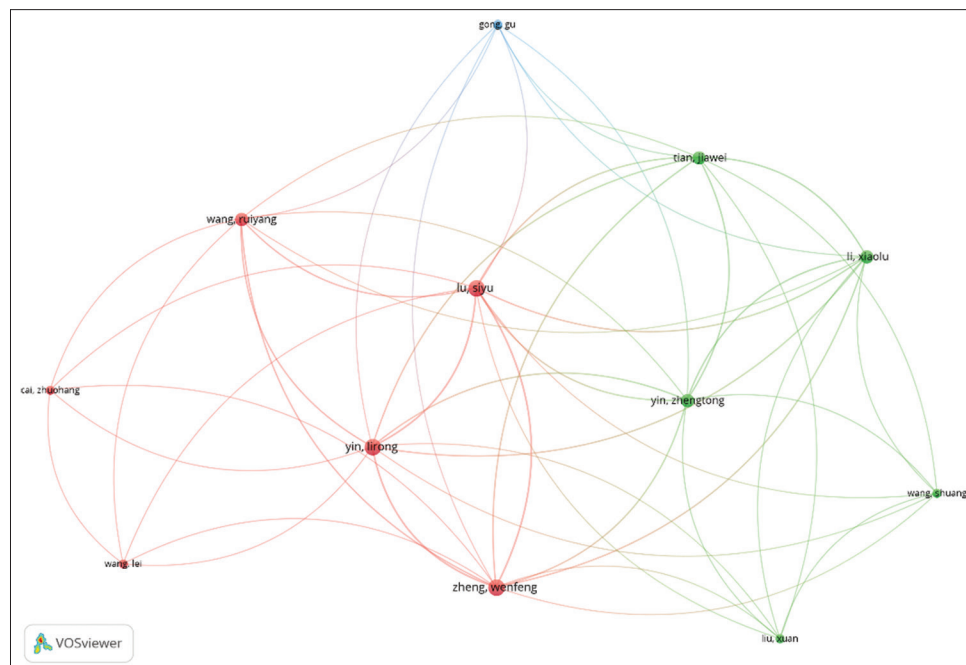
On the other hand, the adoption of artificial intelligence has created a new and significant shift away from traditional methods of employee performance evaluation. AI-driven employee performance evaluation systems are a departure from traditional employee performance evaluation methods. In contrast to periodic human judgment as the primary method of determining an employee's performance, AI-driven performance evaluation systems utilize both algorithmic and structural data to continuously evaluate employee performance. AI-driven performance evaluation systems contain dynamic databases used to track employee performance in real-time. AI-driven performance evaluation systems provide for the rapid identification of exceptional performance, automated feedback to employees and identify performance trends prior to actual deviation. Therefore, AI-driven performance evaluation systems will automatically alert managers if specific performance targets were not met or likely to be unmet within a specified time frame and enable managers to proactively address the performance of their employees.

The increasing volume of research and evidence shows a clear and growing body of knowledge on the positive impact of the integration of AI technology into performance evaluation systems. The inclusion of advanced technologies in an organization's

**Figure 1:** PRISMA systematic review process. Following PRISMA guidelines, 85 peer-reviewed journal articles were selected from an initial pool of 2,852 AI–HRM records after excluding non-relevant items, preprints, dissertations, and practitioner or industry sources. References cited for background or theory were not included in the PRISMA dataset



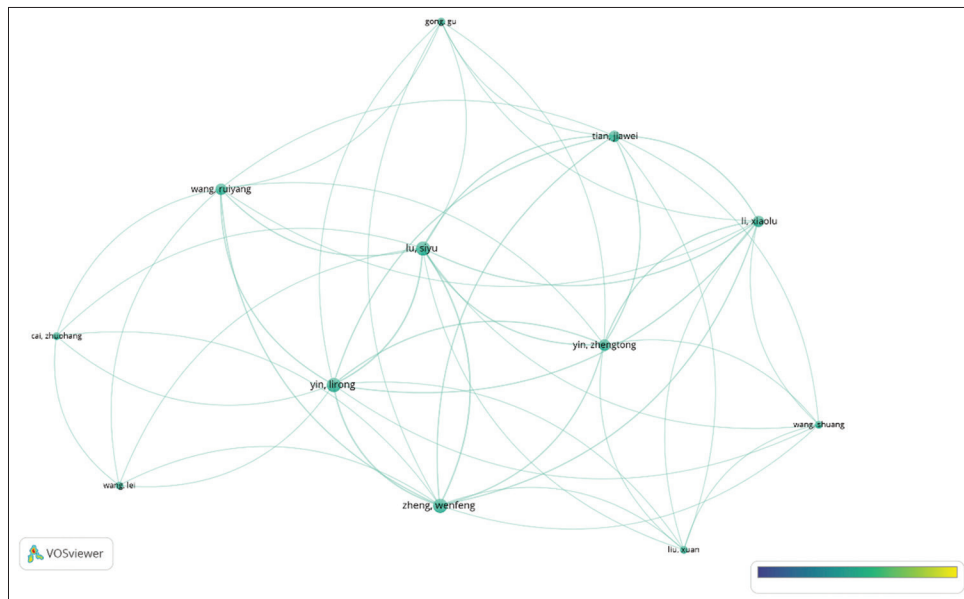
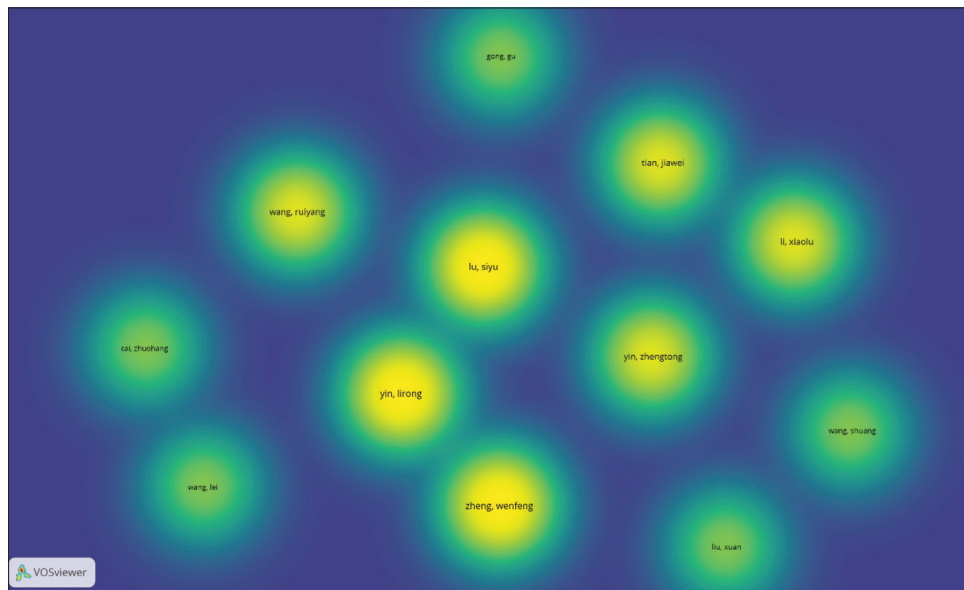
**Figure 2:** Network visualization



ecosystem, according to Chukwuka and Dibie (2024), will help to make human resources management processes both more reliable and efficient, because they eliminate human error and the subjective nature of performance evaluation. Furthermore, their research demonstrated that AI-based performance evaluation systems resulted in better consistency in decision-making and ultimately in better performance. As HRM continues to evolve

toward more reliance on AI for performance evaluations, it signifies a broader paradigmatic shift in which AI has evolved from automation of specific tasks to providing data-driven insights to inform managerially relevant decisions.

In addition to performance evaluation, AI has positively impacted other areas of Human Resource Management, including recruitment,

**Figure 3:** Overlay visualization**Figure 4:** Density visualization

employee engagement, career development, and workforce planning. Yawalkar (2019), Bhardwaj et al. (2020) have both identified that AI is able to greatly reduce the administrative burden associated with performing HR related activities; provide increased operational efficiencies for organizations; and enable HR professionals to focus on higher level strategic work. Empirical evidence from Indian IT organisations also supports these efficiency claims. Using survey data and structural equation modelling, Nawaz et al. (2024) found that AI-related factors such as accuracy, automation, and real-time experience significantly contributed to time saving and cost reduction in HRM practices. However, the study also notes that personalisation may not translate into immediate cost benefits, and organisations may need a longer horizon to realise savings from AI-enabled personalisation. Additional conceptual and empirical studies have also documented that AI and other digital technologies are changing the way HR functions operate by integrating analytical

tools, human-machine interfaces, and predictive capabilities into the fabric of HRM. Pathak and Solanki (2021); Qamar et al. (2021) have extensively detailed these changes.

Further research has been conducted on the strategic ramifications of AI for future workforce management. Ilyas and Qadir (2024) indicate that AI allows companies to create a strategic plan based on data with respect to forecasting and preparing for skills required in the organization; allocating talent to areas that are most important to the company; and supporting long term sustainability of the work force. Likewise, Johnson et al. (2022); and Popo-Olaniyan et al. (2022), report that the use of AI to automate routine HR processes frees up HR professionals to shift from an administrative position to more strategic or developmental positions. This represents the changing function of human resource management (HRM) within the context of AI, which is to utilize technology to augment, not substitute, human judgment.

While there have been many benefits associated with the adoption of AI in HRM, several studies suggest caution in adopting AI without considering its limitations. There is considerable empirical evidence to demonstrate that AI has the ability to improve both efficiency and accuracy of HRM functions; however, the necessity of human oversight continues to be paramount, especially when high-risk decisions are being made, i.e. performance evaluations and career advancement opportunities (Khan et al., 2023). The

same studies demonstrate that ethical issues associated with accountability, transparency and employee perceptions continue to exist. In addition, while AI may provide some reduction in the occurrence of bias, it also introduces new challenges and issues to the concept of algorithmic accountability and decision explanation (Rodgers et al., 2023). Finally, qualitative studies demonstrate that the implementation of AI-based HR transformations requires organizational change and the use of change management strategies to address employee resistance and role ambiguity (Zhang, 2024).

**Table 1: Distribution of publications by publisher and platform in the selected dataset (2019-2024)**

Publisher/source type	Number of studies
Elsevier	22
Springer nature	14
Emerald	11
Wiley	9
Taylor & Francis	8
SAGE	5
MDPI	6
IEEE (peer-reviewed conference proceedings only)	6
Other peer-reviewed journals*	4
Total	85

Table 2. illustrates the major empirical and conceptual contributions that have been examined in terms of the role of AI across various HRM functional areas. Overall, these studies collectively illustrate how the implementation of AI can enhance process efficiency, improve evaluation accuracy, and enable individualized employee development, while illustrating the unaddressed issues related to ethics, data governance and organizational preparedness (Sucipto, 2024). The findings indicate that the primary benefit of AI in HRM does not relate to eliminating the need for human decision-making, but rather to enhancing the ability of humans to make better informed decisions via continuous data analysis and decisional support.

**Table 2: Systematic review of artificial intelligence on human resource management**

References	Research design/methodology	HRM focus and AI Dimensions	Key insights
Yawalkar (2019)	Descriptive study based on secondary data from academic and industry sources	AI, Machine Learning, HRM Functions	AI adoption is expanding across HR functions, particularly recruitment and performance evaluation, reducing HR workload and improving operational efficiency.
Bhardwaj et al. (2020)	Quantitative survey of HR professionals in technology-intensive industries; statistical analysis	AI adoption, Ease of Use, Innovativeness, Industry 4.0	AI replaces routine HR tasks, contributes to lower employee turnover, and enhances talent retention.
Pathak and Solanki (2021)	Conceptual and exploratory review of secondary literature	AI, IoT, Human–Machine Interaction, Data analytics	AI and IoT transform HR functions including recruitment, performance management, and training, while raising ethical and data governance concerns that require HR upskilling.
Qamar et al. (2021)	Systematic literature review of 59 peer-reviewed studies	AI techniques, HRM decision-making	AI tools support managerial decision-making across HR functions by improving analytical capability and consistency.
Johnson et al. (2022)	Literature review with embedded case analysis (e.g., Unilever)	AI in public sector HRM, Strategic HR	Automation enables HR professionals to shift from administrative tasks to strategic and long-term workforce planning roles.
Popo-Olaniyan et al. (2022)	Thematic literature review	AI integration, HR trends, Strategic HR	AI supports the strategic repositioning of HR by automating administrative activities and enabling personalised learning and development.
Lahoti (2023)	Quantitative survey of 291 HR employees using descriptive and inferential analysis	AI in recruitment, training, performance management	AI adoption improves recruitment efficiency and performance evaluation accuracy; employees exhibit favourable attitudes toward AI-enabled HR practices.
Khan et al. (2023)	Qualitative study using semi-structured interviews with HR practitioners	AI in recruitment, human oversight	AI adoption in recruitment remains limited to pre-screening stages; human judgement remains critical for final hiring decisions.
Rodgers et al. (2023)	Conceptual analysis using the throughput model	AI ethics, perception, accountability	AI may reduce certain biases but introduces accountability and ethical challenges, highlighting the need for participatory system design.
Zhang (2024)	Qualitative case study of organisational AI adoption	AI integration, organisational adaptation, HRM transformation	AI-driven HRM leads to organisational change, reshapes employee roles, and requires adaptive management strategies.
Ilyas and Qadir (2024)	Comprehensive literature review of empirical and conceptual studies	AI Integration, Strategic HRM, Workforce Planning	AI reshapes HR functions by automating routine processes, enabling data-driven decisions, and supporting long-term workforce planning, while raising privacy and resistance concerns.
Sucipto (2024)	Systematic literature review (89 articles screened; 37 analysed)	AI, HRM effectiveness, employee development	AI improves HRM efficiency, recruitment accuracy, and personalised employee training outcomes.

#### 4.1. Impact of Artificial Intelligence on Recruitment and Talent Acquisition

AI use in recruitment and talent acquisition is becoming an increasingly well-known application of AI in human resource management. Recruitment is typically characterized as being highly transactional with large numbers of applications received per position, high pressure to fill positions quickly and subjective candidate evaluation, making it highly suitable for technological innovation. With organizations operating increasingly in a competitive and digitally mediated labor market, AI-based recruitment tools are seen as a method to increase organizational efficiency, match better qualified candidates with open positions and provide HR managers with data driven hiring decisions.

Many early qualitative and quantitative studies show that AI increases the effectiveness of the recruitment process through automation of many of the routine tasks involved in the recruitment process (e.g., resume screening, scheduling interviews, initial candidate communication) (Abdul et al., 2020; Albert, 2019; Johansson and Herranen, 2019). By automating many of these routine tasks, HR Managers will be able to focus their time on more strategic recruiting efforts (i.e., employer branding, candidate engagement), which will result in increased productivity, faster hiring cycles, lower costs, improved communication, and more consistent screening results (Wright and Atkinson, 2019; Talwar and Agarwal, 2022).

Although there are many potential advantages to adopting AI in the recruitment process, the level of adoption varies greatly across organizations and industries. Several studies have illustrated that there is a very limited use of AI within the hiring process at the early stages of the hiring process (screening, shortlisting) (Jatoba et al., 2019; Mukherjee and Krishnan, 2022; Khair et al., 2020). The reasons for this limitation of using AI are many, but most of them can be explained by the knowledge gap regarding the application of AI in the hiring process, the technological capacity of supporting the recruitment function (Okeyika et al., 2023), and the aversion of HR professionals to apply new technologies (Johansson and Herranen, 2019). Demographic characteristics of decision-makers (age, educational level, experience with technology) also influence their perspectives on AI-based recruitment tools (Gaur et al., 2024). For instance, higher educated individuals were shown to be more sceptical of AI-based recruitment tools (Gaur et al., 2024).

The theme of how AI affects the process of recruitment through potential bias was another recurring theme in many articles. The ability of an AI system to remove some of the less conscious types of bias by using objective evaluation criteria and removing subjective judgement in the decision-making process could be a positive aspect of an AI system. However, AI systems may reproduce or even amplify biases present in the data used to train them (Khair et al., 2020; Raveendra et al., 2020; Hemalatha et al., 2021). There are several studies that demonstrate the reduction of multiple forms of bias such as the “halo effect” and a more equal screening of candidates’ resumes when using AI-based screening tools. Nevertheless, the increasing trend of AI being implemented into the recruitment process has created concern for the issue of algorithmic discrimination (Delecraz et al., 2022); specifically,

AI-based screening has been shown to produce unequal hiring outcomes for applicants with different nationalities which creates further concerns for the issue of algorithmic discrimination (Delecraz et al., 2022). While studies have not shown similar unequal hiring outcomes based upon applicant’s age and gender (Delecraz et al., 2022), these findings raise the level of concern for utilizing AI in the recruitment process.

In addition to technological and implementation-related challenges in the broad adoption of AI-based systems for recruitment, additional challenges include candidate perceptions and ethics. While AI-based recruitment systems are often perceived as being more efficient, and more personalized than their human counterparts, the degree to which candidates perceive AI-based recruitment systems as being fair and transparent varies significantly across studies (Cai et al., 2024). Experimental results indicate that, at least on occasion, AI-based resume-screening methods may be perceived by candidates as less fair than human resume-screening (Cai et al., 2024), particularly if the outcome of the AI-based screening process was unfavourable to the candidate. In addition, conceptual and ethical analyses have raised concerns about the implications of AI-based recruitment systems for dehumanizing recruitment processes, holding individuals accountable for the outcomes of AI-based hiring decisions, and the potential loss of human values in decision-making during the recruitment process (Fritts and Cabrera, 2021; Al-Alawi et al., 2021). Consequently, recent research has emphasized the need for humans to be involved in the oversight and explanation of AI-based hiring processes.

Studies have now viewed AI as a recruitment decision support system to enhance the abilities of Human Resource personnel by utilizing AI to assist in decision-making and augmenting the capabilities of HR professionals instead of making decisions autonomously (Ulfa et al., 2022; Alam et al., 2020). In addition to this view of AI as a decision support system, research has been conducted using behavioural and structural modelling approaches to examine how attitudes toward AI, perceived trust and perceptions of behavioural control impact upon the adoption and successful implementation of AI (Alam et al., 2020; Ulfa et al., 2022; Gaur et al., 2024). The empirical literature has further illustrated that the application of AI in recruitment will have positive effects on an organization’s attractiveness to candidates, candidate experiences, and applicant willingness to submit job applications when the implementation is completed with transparency and ethics (Ahmadi et al., 2024).

The above studies and studies presented in Table 3 demonstrate a shift in the manner in which organizations are selecting employees from traditional manual and/or intuitive selection procedures toward more technologically-based and automated methods that produce consistent results, and are efficient while providing employment-related decisions based upon data. It appears from the above studies that despite the benefits of using AI in recruitment, there remain issues related to the fairness and explainability of the use of artificial intelligence in recruiting, accountability for the ethical implications of the use of AI in recruiting, and whether organizations are adequately prepared to implement AI in their recruitment processes.

**Table 3: Key empirical and conceptual studies on AI in recruitment**

References	Methodology	Primary focus	Core contribution
Johansson and Herranen (2019)	Qualitative interviews	Recruitment automation readiness	AI improves recruitment efficiency, but organisational readiness remains a constraint.
Wright and Atkinson (2019)	Qualitative thematic analysis	Bias, inclusion, candidate experience	AI adoption reshapes hiring outcomes while raising fairness and perception concerns.
Jatoba et al. (2019)	Quantitative survey	HR awareness and adoption	AI adoption in recruitment remains low despite strong future expectations.
Albert (2019)	Mixed-methods	AI tools in recruitment	Identified key AI applications (e.g. chatbots, screening); adoption strongest in large firms.
Abdul et al. (2020)	Mixed-methods	Recruitment technology use	AI tools enhance recruitment efficiency, particularly at screening stages.
Raveendra et al. (2020)	Systematic literature review	Bias reduction	AI reduces unconscious bias in hiring decisions through automated evaluation.
Alam et al. (2020)	Quantitative (SEM)	Adoption intentions	Behavioural intention and peer influence significantly affect AI use in recruitment.
Khair et al. (2020)	Conceptual review	Ethics and governance	AI improves efficiency but raises fairness and algorithmic bias concerns.
Hemalatha et al. (2021)	Quantitative survey	NLP and automation	NLP-driven tools improve accuracy, reduce bias, and enhance candidate experience.
Al-Alawi et al. (2021)	Qualitative expert interviews	Ethics and adoption	AI adoption is gradual but linked to efficiency and diversity gains.
Manthena et al. (2021)	Quantitative (ANOVA)	Recruitment performance	AI significantly improves recruitment outcomes and process optimisation.
Fritts and Cabrera (2021)	Conceptual ethical analysis	Dehumanisation risk	Warns against loss of human judgement and value replication in algorithmic hiring.
Tschang and Almirall (2021)	Conceptual framework	Automation versus augmentation	AI augments human decision-making while reshaping job roles.
Mukherjee and Krishnan (2022)	Quantitative survey	Talent acquisition	AI mainly used for screening; soft-skill assessment remains limited.
Ulfa et al. (2022)	Quantitative (PLS-SEM)	E-recruitment efficiency	AI and virtual tools improve recruitment reach and cost efficiency.
Talwar and Agarwal (2022)	Mixed-methods	Ease of use	Ease of AI use positively influences hiring outcomes.
Delecraz et al. (2022)	Experimental modelling	Algorithmic fairness	AI recruitment systems show nationality bias; design interventions can mitigate risks.
Rathore (2023)	Bibliometric review	Research trends	Highlights fragmentation and calls for interdisciplinary HR-AI research.
Meshram (2023)	Quantitative analysis	Cost efficiency	AI adoption reduces recruitment costs and improves productivity.
Ahmadi et al. (2024)	Mixed-methods (SEM)	Candidate attraction	AI-based recruitment enhances organisational attractiveness and applicant intent.
Cai et al. (2024)	Experimental design	Fairness perceptions	AI screening perceived as less fair than human judgement, depending on outcomes.

## 4.2. Impact of Artificial Intelligence on Employee Development and Learning

Artificial intelligence (AI) is increasingly used as an emerging model for employee development and training. In today's fast-paced work environment, technology continues to evolve at a rapid pace; this has created an environment where employers have had to rethink how they deliver training to their employees.

In the past, employee development was often structured around standard, one-size-fits-all training programs that delivered similar information across all participants with little opportunity for participant input or evaluation. This method is becoming outdated due to AI-enabling technologies that create flexible, customized and continuous learning opportunities. There is substantial empirical support that supports the premise that the use of AI-based learning technologies significantly enhances the effectiveness and quality of employee development programs.

Roopalatha and Sucharita's (2024) research on the impact of using AI-enabling technologies such as intelligent tutoring systems, programmed instruction and enhanced Audio-Visual media as part of employee development demonstrate positive impacts on both the level of employee development and the engagement of the employees participating in the program. AI-enabled systems offer real-time feedback and dynamic learning environments providing substantial enhancements to employee knowledge retention and sustaining employee motivation to learn. Immersive technologies such as virtual reality (VR), augmented reality (AR), and simulations enable employees to apply theoretical concepts learned in the classroom setting into realistic, controlled, and practical applications of those theories and concepts, reducing the gap between the employee's ability to apply the knowledge gained in the classroom to be able to perform in the workplace.

These results are supported by a larger body of research on AI's role in developing customized learning opportunities and supporting competency development. A number of studies have

also shown that AI-based systems can identify individualized skills gaps and provide recommendations for specific training modules as well as long-term career development planning options (Ghedabna et al., 2024; Pandya and Wang, 2024).

Research based on the Socio-Technical and Human-AI Partnership frameworks suggest that Employee Collaboration with AI Systems may lead to the improvement of Knowledge Sharing, Organizational Socialization, and Learning Continuum (Chowdhury et al., 2022). With respect to the application of AI within Employee Development, we see a paradigm shift in the way AI is being viewed as an Enhancement to the Human Learning and Development Process rather than simply as a Tool to Automate Training.

Most of the literature reviewed in this section focuses on how AI will affect employee development. Many psychological, organizational, and ethical concerns exist as it relates to using AI-based systems in employee development. While AI-based systems may provide many advantages when it comes to employee development, they may also cause Negative Impacts such as disruption of psychological contracts and loss of trust and engagement among Employees who believe AI-based systems rely too heavily on Technology to Monitor and Evaluate Performance (Braganza et al., 2021). Likewise, employee fears about data privacy, surveillance, and evaluation/monitoring by AI-based learning platforms (Hughes et al., 2019; Roopalatha and Sucharita, 2024) have been shown to decrease motivation and desire to participate in AI-based learning programs. Similar to other innovations, financial resources are typically a limiting factor for organizations to fully implement AI-based training solutions and to invest in the hardware, software, and employee training necessary to support the implementation of AI-based training solutions. The impact of AI on the workplace is dependent on organizational culture, as well as how the system is used in a particular company. Employee reliance and trust of AI-based systems may also have an effect on the way that employees collaborate and work together (Kong et al., 2023). When employees trust the decisions made by an AI system, there can be an increase in collaboration among employees, which leads to higher levels of productivity (Kong et al., 2023).

Additionally, some research indicates that the implementation of AI-based systems can create unintended negative consequences such as a lack of employee accountability and reliance on automated processes in government agencies and public sector organizations (Wang et al., 2023). As stated above, while AI-based systems may improve productivity and efficiency, they may not always contribute positively to employee well-being and knowledge sharing. Therefore, it appears that employee development is likely to remain a function of organizational leadership, organizational culture, and employee oversight.

As per Table 4, a total of three decades of research have demonstrated a range of empirical, conceptual, and methodological contributions that demonstrate how AI could be used for the purpose of employee development between 2019 and 2024. The literature demonstrates that AI-based training platforms are capable of providing employee training that adapts to evolving

skill demands; provides employees with personalised learning opportunities; improves the ability of organisations to develop adaptable workforces; and creates challenges related to issues such as employee job security, trust in AI, organisational accountability and employee willingness to adopt AI-based technologies. Additionally, the literature highlights the importance of developing the required competencies of employees and their trainers to work successfully in an environment where AI is being increasingly used (Morandini et al., 2023; Joshi and Mashi, 2023). Notably, some recent literature has shown significant variation in the adoption and effectiveness of AI in relation to different demographics and organisational settings; this has been highlighted as demonstrating the variable impacts that AI can have on employee development (Rožman and Tominc, 2024; Chuang, 2024).

The evidence reviewed in this paper supports the idea that while AI has some potential for improving employee development, its contributions to employee development are likely to be limited by its inability to replace human learning; therefore, the success of incorporating AI as part of an employee development strategy will ultimately rely on organizational investment in both the AI technology itself (strategic investment), and on the ethical management of that technology (governance) to ensure that the capabilities of the technology are aligned with those of the workforce members and organizations they represent and sustainable into the future. (Malik et al., 2021)

## 5. DISCUSSIONS

### 5.1. From Automation to Augmentation in HRM

Volatile and non-linear business environments, often conceptualised through VUCA and BANI frameworks, increase pressures on organisational adaptability and coordination (Daroshka et al., 2024). Research on human capital management and innovation highlights how such uncertainty amplifies the need for technologically supported capability development and decision structures (Štaffenová and Kucharčíková, 2024). From the above analysis, the evolution of artificial intelligence (AI) within human resource management (HRM) appears to be moving beyond the automation of routine administrative tasks toward a more decision-support and augmentation-oriented role (Basnet, 2024: Arslan et al., 2022). Although early applications of artificial intelligence in human resource management were primarily oriented toward automating routine and repetitive activities within recruitment and related HR functions (Vedapradha et al., 2019), these applications largely focused on efficiency gains and offered limited support for complex decision-making. More recent research indicates a shift in the application of AI within HRM. Rather than simply automating administrative tasks, AI systems are increasingly used to augment and enhance the judgement of HR professionals in making complex and high-stakes decisions. Conceptual work in HRM similarly suggests that AI's primary impact lies not in replacing HR functions, but in reshaping HR decision processes, governance responsibilities, and the strategic role of HR professionals within organisations (Stone et al., 2024). Many contemporary studies are now focusing on the advent of agentic and reasoning-type AI systems that provide HR professionals assistance in evaluating a number of options during complex decision-making situations. The

**Table 4: Key studies on AI and employee development, engagement, and capability building**

References	Methodology	Primary focus	Core contribution
Hughes et al. (2019)	Literature review and case analysis	Motivation, engagement	AI-driven motivation enhances job satisfaction and retention, while perceived risk reduces trust and engagement.
Prentice et al. (2020)	Quantitative survey (SERVQUAL)	Service quality, loyalty	Employee service quality has a stronger positive effect on loyalty than AI service quality when both are jointly considered.
Braganza et al. (2021)	Quantitative survey	Psychological contract	AI adoption weakens psychological contracts, leading to lower employee trust and engagement.
Pratt et al. (2021)	Mixed-methods modelling study	Motivation, retention	Employee motivation and teamwork strongly predict job satisfaction and retention probabilities.
Evseeva et al. (2021)	Conceptual literature review	Digital HR under uncertainty	AI-enabled digital tools support employee development decisions in VUCA/BANI environments.
Chowdhury et al. (2022)	Quantitative survey (SEM)	Human-AI collaboration	AI-human partnerships foster knowledge development and organisational socialisation.
Kong et al. (2023)	Quantitative moderated mediation	Trust, well-being	Trust in AI systems improves employee well-being and productivity, especially among protean career-oriented employees.
Joshi and Mashi (2023)	Qualitative synthesis	Industry 5.0 competencies	Identified core AI-related competencies required for employee development in Industry 5.0 contexts.
Wang et al. (2023)	Quantitative regression and mediation	Responsibility, control	AI adoption reduces employee responsibility, with stronger effects in government-controlled firms.
Shaikh et al. (2023)	Quantitative survey (PLS-SEM)	Mental health, productivity	AI improves productivity, with no significant moderating role of leadership on well-being.
Morandini et al. (2023)	Conceptual and intervention design	Upskilling, learning	Identified essential trainer competencies for preparing employees in AI-driven work environments.
Ghedabna et al. (2024)	Mixed-methods	Personalised learning	AI supports skill mapping and personalised employee development, enhancing HR outcomes.
Rozman and Tominic (2024)	Quantitative survey (SEM)	AI culture, leadership	No gender gap in AI adoption; differences observed in AI use for workload reduction and analytics.
Pandya and Wang (2024)	Scoping literature review	Career development	AI improves efficiency but increases job insecurity and career disruption risks.
Chuang (2024)	Quantitative survey	Human skills	Employees demonstrate strong human skills in AI-era workplaces, with variation by education and gender.

definition of agentic AI, represents systems that are able to perform contextualized reasoning, adaptive learning, and goal-orientated support and enable HR managers to assess a number of different scenarios, rather than being limited by rule-based automation (Bositkhanova and Dadaboyev, 2025). This change parallels a broader transition noted in workforce planning and HR strategy, in which AI is acting as a strategic partner that provides increased support for forecasting, talent allocation, and sustainable long-term workforce planning (Bositkhanova and Dadaboyev, 2025).

This transition is also reflected in the increasing use of AI for decision-support versus AI making decisions unilaterally in recruitment and talent acquisition. While AI-driven tools quickly process very large pools of applicants and identify potential candidates that match the qualifications listed in a job posting, the ultimate decision of who to hire is typically made through collaboration between the AI system and a human manager. Researchers studying explainable and human-cantered AI, suggest that recruitment systems are most successful when the outputs generated by the AI system are interpretable and open to evaluation and assessment by a human manager, especially in high-risk hiring environments (Cai et al., 2024; Haque et al., 2023). This finding supports earlier results reported in this study that organizations will still utilize human judgment in the ultimate decision of who to select for employment, even though the initial phases of the recruitment process may include extensive levels of automation.

A similar trend is also apparent in the areas of performance management and employee development. AI-enabled analytical

systems can provide instant feedback, predictive insights, and personalized learning recommendations; however, the success of AI-enabled analytical systems will depend on how effectively HR managers interpret and act on the data provided by the AI system. Research in human-AI augmentation, indicates that AI produces better results when it enhances a manager's ability to make sense of data and not when it substitutes for evaluative discretion (Nisa et al., 2025). In the area of training and development, AI-driven adaptive learning platforms are becoming more commonly viewed as tools that support ongoing skill development and career navigation and less as standardized training delivery systems (Morandini et al., 2023; Pandya and Wang, 2024). Evidence from e-recruitment and AI-enabled staffing research also shows that digital recruitment channels can improve screening speed and candidate communication, but still require careful design to protect applicant experience and fairness (Fernandes and Machado, 2022; Hosain et al., 2020; Jayaraj et al., 2023; Gusain et al., 2023; Allal-Chérif et al., 2021; Alrakhawi et al., 2024).

The research also demonstrates a move from a deterministic view of how AI functions into a socio-technical view, where the organizational results are based on interactions between the AI system, human actor, and organizational context. Recent conceptual work supports this socio-technical view by proposing a two-tier model for AI integration in HRM. At the "hard" level, AI improves efficiency through automation and data-driven decision support across recruitment, training, performance evaluation, and compensation. At the "soft" level, the model stresses employee engagement through participatory implementation, transparent

communication, and structured training in digital skills. The authors also highlight a continuous feedback loop, where pilot testing and iterative adjustments improve acceptance and collaboration over time. This perspective strengthens the idea that AI adoption in HRM works best when technical optimisation is aligned with employee trust, cultural readiness, and ethical safeguards (Chowdhury et al., 2023). A number of studies have shown that when AI is embedded within an organizational structure that values human expertise, learning and judgment, AI can contribute more to the organization (Chowdhury et al., 2023; Haque et al., 2023). Overall, the findings of this study suggest that the bibliometrics identified in the study support this shift, as well as the increasing trend in recent studies for HRM to focus on themes such as decision augmentation, explainability and strategic integration of HR, and less so on pure automation.

In summary, the overall findings suggest that the implementation of AI is changing the function of HRM by enhancing human capability and enabling HR Professionals to develop the role from operational administrative roles to strategic decision-making roles. However, this will not be uniform or happen automatically, but will be influenced by organizational preparedness to use the information generated from the AI system, the quality of the data used to generate the information and the ability of HR Professionals to critically evaluate the output of the AI system.

## 5.2. Ethical, Human, and Governance Implications of AI Adoption in HRM

The benefits of transitioning from automation to augmentation present numerous advantages; however, they also create challenging ethical, human and governance issues which will require substantial thought and deliberation. Across all of the reviewed literature there is one issue that consistently appears concerning algorithmic bias and fairness particularly within the areas of recruitment and performance assessment. In addition, while AI systems may be marketed as neutral and objective, empirical research has shown that the use of biased training data and lack of transparency in algorithms results in the perpetuation of current inequalities and potentially exacerbate them (Delecraz et al., 2022; Horodyski, 2023). As such, the necessity for transparency and continuous auditing of AI systems being utilized for making HR-related decisions has been reinforced (Tambe et al., 2019)

Therefore, explanatory ability has emerged as an essential factor for adopting responsible AI in HRM. Explainable AI (XAI) research shows that HR professionals and employees tend to be more trusting of AI-assisted decisions, if they can understand and query the reasoning behind those decisions (Haque et al., 2023). Without explanatory ability, AI-based HR-related decisions could lead to employee distrust, perceived procedural injustice, and organizational legitimacy. In addition, this is particularly relevant with respect to performance evaluation, promotion, and career development, since opaque decision-making by management may have serious long-term effects on the careers of employees. Tong et al. (2021) provide strong empirical evidence for this concern in the context of AI-driven performance feedback. Their field experiment shows a “deployment effect,” where AI feedback improves employee performance by enhancing feedback quality,

but also a “disclosure effect,” where employees respond negatively when they are explicitly told that AI generated the feedback. This negative reaction weakens trust and learning from feedback, although it is reduced among employees with longer tenure (Tong et al., 2021).

Human oversight and accountability are also significant components of good governance. Supporters of “human-in-the-loop” AI argue that instead of replacing human decision-makers, AI should be used to support those decision-makers, especially in high-stakes HR settings (Nisa et al., 2025; Horodyski, 2023). Human oversight can help protect an organization from ethics-related risks, as well as provide moral accountability and contextual knowledge to a process which may otherwise become overly dependent on AI and risk being depersonalized or dehumanized (Braganza et al., 2021; Fritts and Cabrera, 2021).

Data privacy and surveillance issues complicate AI adoption in HRM as well. Many AI based HR systems utilize vast amounts of employee data, including performance metrics, behavioural indicators, and learning analytics. If left unregulated, the use of such large amounts of employee data by HR systems could negatively impact employee autonomy and create perceptions of overly invasive monitoring of employees. Current research stresses the need for organizations to establish data governance standards, obtain employee consent to collect and store data, and comply with applicable laws and regulations in order to ethically deploy AI across all organizational contexts (Haque et al., 2023; Bositkhanova and Dadaboyev, 2025).

The increased implementation of AI technology in human resource management will ultimately have a significant impact on the evolution of the role of the HR Professional. Rather than eliminating HR positions, AI will fundamentally alter the roles and responsibilities of HR Professionals through developing new technical and professional skills such as data analytics, ethics, and strategic decision making. The use of artificial intelligence in workforce planning and in agentic systems is increasing (Bositkhanova and Dadaboyev, 2025; Nisa et al., 2025). Without the ability to critically assess AI-generated information and apply that judgement to workforce planning and organisational governance decisions, HR professionals may encourage an over-reliance on automated solutions, reducing human oversight.

Overall, the ethical and governance challenges presented by AI in HRM necessitate a balance and people-centered strategy for implementing AI in organizations. Effective HRM in the AI age will require not only advanced technology but also institutional safeguards, ethical oversight and ongoing communication between humans and intelligent systems. The evidence reviewed in this paper indicates that integrating AI sustainably into HRM requires that technical capabilities be aligned with human values, organizational culture and governance structures.

## 5.3. Emerging Frontier: Agentic AI, Explainability (XAI), and Human-AI Teaming in HRM

Recent scholarship indicates that the evolution of AI in HRM is moving beyond task-level automation toward more

autonomous, reasoning-oriented, and agentic systems capable of goal pursuit, contextual adaptation, and sustained interaction with human decision-makers (Nisa et al., 2025; Mukherjee and Chang, 2025). This shift is particularly consequential for HRM, where recruitment, performance management, and employee development are interdependent across the HR lifecycle. Evidence suggests that such systems can enhance strategic workforce planning and organisational responsiveness, but only when boundaries between algorithmic autonomy and human accountability are clearly governed (Bositkhanova and Dadaboyev, 2025; Dima et al., 2024; Tinguely et al., 2023). Parallel research on explainable AI (XAI) highlights explainability as a critical mechanism for trust, legitimacy, and procedural justice, although studies caution that transparency is often treated normatively rather than operationally (Haque et al., 2023; Pinto et al., 2025). HR-focused research demonstrates that explainability outcomes depend heavily on user AI literacy and contextual understanding, with poorly designed explanations sometimes undermining rather than enhancing decision confidence (Kalf and Simbeck, 2025). Empirical findings from recruitment and screening contexts further show that fairness perceptions deteriorate when AI replaces human judgement without adequate explanation and oversight, underscoring the importance of human-in-the-loop governance (Cai et al., 2024). Beyond hiring, explainable models have been applied to employee attrition and retention analysis, illustrating how interpretability can support targeted interventions while preserving managerial responsibility (Marín Díaz et al., 2023). At the same time, emerging work on AI agents and employee well-being suggests both productivity gains and heightened concerns regarding autonomy, monitoring, and psychological safety, calling for more rigorous evaluation and governance of agentic systems before large-scale HR deployment (Ravirajan and Sundarajan, 2025; Sadeghi, 2024; Meimandi et al., 2025). Collectively, this body of evidence reinforces the central argument of this review: the future of AI in HRM lies in augmentation rather than replacement, requiring integrated governance frameworks that embed explainability, accountability, and sustained human oversight across AI-enabled HR processes (Nisa et al., 2025).

## 6. RESEARCH GAPS

Although the number of publications about artificial intelligence (AI) in human resource management has been rapidly increasing, some of the major gaps that have been identified in the literature have yet to be addressed by researchers. Most of the studies on AI in human resource management have focused primarily on automating specific tasks in human resource management, especially in the areas of recruitment screening, performance appraisals, and the cost savings associated with automating tasks. Therefore, they provide little insights into how AI can support the human judgment required for strategic and value-based human resource decisions. Additionally, almost all of the empirical studies on AI in human resource management use either a short-term design or a cross-sectional design and therefore do not explore the longer-term organizational implications of adopting AI, including its impact on employees' trust in their employers, their psychological contracts with their employers, and changes in the organizational culture and the evolving identities of human

resource managers (Bositkhanova and Dadaboyev, 2025; Nisa et al., 2025).

Recent conceptual studies suggest that the future of AI will be in the form of agentic and reasoning-oriented AI systems; however, there is a lack of empirical evidence on the long-term human-AI interactions, human-AI accountability and decision authority in the context of Human Resource Management (Cai et al., 2024; Haque et al., 2023).

Finally, although the ethical concerns associated with the use of AI in human resource management, specifically regarding algorithmic bias, transparency, and data privacy, are often mentioned in the literature, there is very little evidence in the literature of tested governance and explainability frameworks for addressing these concerns. Although the research on explainable AI shows that transparency is important to both procedural justice and employee acceptance of AI-based systems, the application of these principles in HRM research and practice is still underdeveloped (Cai et al., 2024; Haque et al., 2023).

Additionally, the literature in AI and HRM is also fragmented along the different functional areas of human resource management, with limited theoretical integration across the functional areas of recruiting, performance management, and employee development, which limits our ability to consider a lifecycle perspective of AI-enabled human resource decision making. This fragmentation is also disciplinary, as technical studies often focus on developing AI tools for specific HR tasks, while management and social science research mainly examines outcomes and consequences, leaving the overall field weakly integrated in theory (Pan and Froese, 2023).

This study addresses these gaps by using a hybrid approach of a bibliometric analysis and a narrative review of the literature to synthesize the research on AI across the primary functional areas of Human Resource Management and to reconceptualize AI in HRM from being a tool used for task automation to being a decision-augmentation technology. This study integrates new research on agentic AI, explainability, and human-in-the-loop governance to develop an integrative framework for understanding how humans and AI systems collaborate in the area of Human Resource Management and to establish a foundation for developing ethical, sustainable, and human-centered approaches to AI adoption.

### 6.1. Future Research Directions

To address the limitations that have been identified regarding artificial intelligence in human resource management, future research on artificial intelligence in human resource management should develop an approach that moves beyond a view of artificial intelligence in terms of efficiency or productivity, and instead utilizes an integrated, governance aware, and human centered perspective. A greater emphasis needs to be placed upon the design of artificial intelligence systems which are human centered and create confidence in employees and Human Resources professionals to utilize these systems. In this context, research using human-computer interaction and socio-technical systems theory could examine how the design of the interface, the use of interactive feedback, and the use of decision support explanations

affect employee engagement and the acceptability of AI enabled HR processes (Chowdhury et al., 2022; Haque et al., 2023).

Empirical research is required to study the application of explainable artificial intelligence (XAI) in HRM, specifically in those decision-making areas where decisions are subject to high stakes, including hiring, promotion, and performance appraisal. Research is necessary to determine the effects of the different explanation mechanisms used in XAI, including rule-based reasoning, visualizations of decision criteria, and counterfactual explanations, on perceptions of fairness, legitimacy, and accountability. Research is also required to identify governance mechanisms which include transparency, auditability, and user control into AI enabled HR systems (Delecraz et al., 2022; Haque et al., 2023).

Artificial intelligence is expected to significantly enhance the ability of humans to create, think innovatively and strategically in terms of their human resource management and organizational development roles. The most relevant areas of study are collaborative human-AI models, personalized learning pathways, and workforce planning as autonomous AI systems develop. It is also necessary to examine how to develop the capability to collaborate with AI as a skillset in order to enable the effective co-creation of value in AI-enhanced workplaces (Morandini et al., 2023; Bositskhanova and Dadaboyev, 2025).

Therefore, it is essential to conduct longitudinal comparative studies that investigate the ethical, cultural, and psychological impacts of working in an AI-supported environment. Research in these areas can explore the ways in which the adoption of AI affects employees' sense of self, perceptions of job security, relationships among leaders and followers, and organizational culture in a variety of industries and institutions. Integrating theoretical ethics with empirical HRM research is crucial for the development of practical frameworks for the responsible governance of AI that are grounded in human values and social sustainability (Nisa et al., 2025; Pandya and Wang, 2024; Prikshat et al., 2023).

## 6.2. Implications for Managers

The findings of this research indicate that both managers and human resource (HR) personnel need to begin to view artificial intelligence (AI) as more than a "routine" process automation technology for the execution of various administrative HR functions (i.e., recruitment, employee performance management and employee development), but also as a means of providing strategic support to aid human judgement. This study's results also demonstrate that the employment of AI has the potential to greatly enhance the efficiency of HR related functions, improve the quality of analyses completed and provide faster responses to data-driven HR functions such as the evaluation of resumes, evaluations of employee performance and the creation of personalized employee learning paths. However, the greatest benefit of employing AI is to provide data-based insights to aid in managerial decision-making, as opposed to eliminating or replacing the ability of human managers to make decisions. As a result, HR leaders are encouraged to implement AI technologies

that can support the experiences of professionals and assist with aligning workforce planning strategies to support business objectives and ultimately assist in transitioning HR from being an administrative-focused function to a value-added function centered on employees.

However, effective implementation of AI within HRM also necessitates strong policy and competency-building frameworks. Organizations must establish clear guidelines around issues of fairness, privacy, transparency and accountability in relation to algorithms used in high-stakes decision making related to hiring, promotion or advancement opportunities. Moreover, organizations must ensure there is adequate human oversight and explainability built into all HR-related AI enabled processes to maintain employee trust and fair treatment in organizational processes. As a result, HR professionals will require building new competencies in data interpretation, ethical considerations and decision making supported by AI to be effective in environments that include AI augmentation. If managers are able to link AI implementation to organizationally-driven values and HR-driven governance models, they will be able to contribute to long-term organizational success while ensuring employee well-being.

## 7. CONCLUSION

The present study assessed the changing position of artificial intelligence (AI) within the realm of human resources management through a comprehensive and bibliometric analysis of eighty-five academic works released between 2019 and 2024. This study demonstrates how AI has profoundly altered HRM processes by supporting both administrative and decision-making capabilities for the areas of recruiting, performance assessments, and employee growth and development. Additionally, AI allows HR professionals to move away from the operational aspects of their job to provide more strategic, people-focused services.

Furthermore, the study shows that the use of AI in HRM will continue beyond its current use as an automated tool and become a method of augmenting human judgment. As such, AI-based analytical tools, adaptive learning platforms, and decision-support tools can improve the accuracy, consistency and timeliness of HR-related processes; however, many of the advantages of adopting AI technology into HRM processes are associated with considerable barriers. Examples of such barriers include algorithmic biases, potential violations of employee's right to data privacy, lack of clarity regarding the process by which decisions were made, and a general lack of accountability in AI-based decision making (especially in cases where decisions may affect an employee's career path).

Lastly, the study indicates that successful and sustainable adoption of AI in HRM is dependent on more than just having the ability to deploy the necessary technology. In order for organizations to achieve success through AI in HRM, they must be able to provide some form of human oversight/governance, and align the technology with organizational values in order to create a culture of fairness and trust. Lastly, this study demonstrates that

although AI technology alters the way in which HRM processes are performed, it does not diminish the importance of human judgment, but rather, changes the role of HR professionals from being solely operational, to being more interpretive/strategic decision makers in work environments that utilize AI technology to support HRM related decisions.

In conclusion, the current study makes a contribution to the field of HRM by providing a synthesis of both thematic evidence and bibliometric data demonstrating how AI technology is moving HRM from a stage of task automation to one of decision augmentation. Therefore, future studies and practices must prioritize developing human-centered designs, developing explanations of how AI technologies make decisions, and creating mechanisms to govern the use of AI technology to ensure that AI technology supports organizational performance, while also protecting employee well-being and institutional integrity.

## REFERENCES

- Abdul, C., Wang, W., Li, Y. (2020), The impact of technology on the recruitment process. *Issues in Information Systems*, 21(4), 9-17.
- Ahmadi, M.A., Fachrunisa, R.A., Esaputra, A.B., Kurniawan, F., Abdillah, M.I.T. (2024), Transforming human resources recruitment: The impact of artificial intelligence (AI) on organizational attractiveness and applicant intent. *Benefit Jurnal Manajemen Dan Bisnis*, 99-114.
- Al-Alawi, A.I., Naureen, M., AlAlawi, E.I., Al-Hadad, A.A.N. (2021), The Role of Artificial Intelligence in Recruitment Process Decision-Making. In: 2021 International Conference on Decision Aid Sciences and Application (DASA). United States: IEEE. p197-203.
- Alam, M.S., Dhar, S.S., Munira, K.S. (2020), HR professionals' intention to adopt and use artificial intelligence in recruiting talents. *Business Perspective Review*, 2(2), 15-30.
- 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.
- Allal-Chérif, O., Aránega, A.Y., Sánchez, R.C. (2021), Intelligent recruitment: How to identify, select, and retain talents from around the world using artificial intelligence. *Technological Forecasting and Social Change*, 169, 120822.
- Alrakhawi, H.A.S., Elqassas, R., Elsobeihi, M.M., Habil, B., Abunasser, B.S., Abu-Naser, S.S. (2024), Transforming human resource management: The impact of artificial intelligence on recruitment and beyond. *International Journal of Academic Information Systems Research*, 8(8), 1-8.
- Arslan, A., Cooper, C., Khan, Z., Golgeci, I., Ali, I. (2022), Artificial intelligence and human workers interaction at team level: A conceptual assessment of the challenges and potential HRM strategies. *International Journal of Manpower*, 43(1), 75-88.
- Basnet, S. (2024), Artificial intelligence and machine learning in human resource management: Prospect and future trends. *International Journal of Research Publication and Reviews*, 5(1), 281-287.
- Bhardwaj, G., Singh, S.V., Kumar, V. (2020), An Empirical Study of Artificial Intelligence and its Impact on Human Resource Functions. In: 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM). IEEE. p47-51.
- Bositkhanova, D., Dadaboyev, A. (2025), Revolutionizing workforce planning: The strategic role of AI in HR strategy. *Discover Global Society*, 3, 100.
- Braganza, A., Chen, W., Canhoto, A., Sap, S. (2021), Productive employment and decent work: The impact of AI adoption on psychological contracts, job engagement and employee trust. *Journal of Business Research*, 131, 485-494.
- Cai, F., Zhang, J., Zhang, L. (2024), The impact of artificial intelligence replacing humans in making human resource management decisions on fairness: A case of résumé screening. *Sustainability*, 16(9), 3840.
- Chowdhury, S., Budhwar, P., Dey, P.K., Joel-Edgar, S., Abadie, A. (2022), AI-employee collaboration and business performance: Integrating knowledge-based view, socio-technical systems and organisational socialisation framework. *Journal of Business Research*, 144, 31-49.
- 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.
- Chuang, S. (2024), Indispensable skills for human employees in the age of robots and AI. *European Journal of Training and Development*, 48(1/2), 179-195.
- Chukwuka, E.J., Dibia, K.E. (2024), Strategic role of artificial intelligence (AI) on human resource management (HR) employee performance evaluation function. *International Journal of Entrepreneurship and Business Innovation*, 7(2), 269-282.
- Daroshka, V., Aleksandrov, I., Kulkaev, G., Skryabina, S., Chekhovskikh, I., Vasilenkova, A., Ol, E. (2024), The impact of small business on sustainable development in the Vuca and Bani worlds. *E3S Web of Conferences*, 531, 05035.
- Delecraz, S., Eltarr, L., Becuwe, M., Bouxin, H., Boutin, N., Oullier, O. (2022), Responsible artificial intelligence in human resources technology: An innovative inclusive and fair by-design matching algorithm for job recruitment purposes. *Journal of Responsible Technology*, 11, 100041.
- Dima, A.M., Tigu, G., Pinzaru, F., Artene, A. (2024), The effects of AI on HR activities and the roles of the HR triad: Opportunities and challenges. *Frontiers in Psychology*, 15, 1360401.
- Evseeva, S., Evseeva, O., Rawat, P. (2021), Employee development and digitalization in the BANI world. In: *The International Scientific Conference on Innovations in the Digital Economy*. Cham: Springer International Publishing. p253-264.
- Fernandes, A.B.A., Machado, C.F. (2022), E-recruitment and the impact of the digital age on recruitment: A critical literature review. In: *Organizational Innovation in the Digital Age*. Berlin: Springer. p199-209.
- Fritts, M., Cabrera, F. (2021), AI recruitment algorithms and the dehumanization problem. *Ethics and Information Technology*, 23, 791-801.
- Gaur, V., Kapoor, A., Kulshrestha, C. (2024), Revolutionizing HR functions: How artificial intelligence transforms recruitment and staffing for optimal efficiency. *Journal of Informatics Education and Research*, 4(1), 1279.
- Ghedabna, L., Ghedabna, R., Imtiaz, Q., Faheem, M.A., Alkhayyat, A., Hosen, M.S. (2024), Artificial intelligence in human resource management: Revolutionizing recruitment, performance, and employee development. *Nanotechnology Perceptions*, 20, 52-68.
- Gusain, A., Singh, T., Pandey, S., Pachourui, V., Singh, R., Kumar, A. (2023), E-Recruitment using Artificial Intelligence as Preventive Measures. In: 2023 International Conference on Sustainable Computing and Data Communication Systems (ICSCDS). IEEE. p516-522.
- Haque, A.K.M.B., Islam, A.K.M.N., Mikalef, P. (2023), Explainable artificial intelligence from the end user's perspective: A systematic literature review. *Technological Forecasting and Social Change*, 186, 122120.
- Hemalatha, A., Kumari, P.B., Nawaz, N., Gajenderan, V. (2021), Impact of Artificial Intelligence on Recruitment and Selection of Information

- Technology Companies. In: 2021 International Conference on Artificial Intelligence and Smart Systems (ICAIS). IEEE. p60-66.
- Horodyski, P. (2023), Applicants' perception of artificial intelligence in the recruitment process. *Computers in Human Behaviour Reports*, 11, 100303.
- Hosain, M.S., Arefin, A.H.M.M., Hossin, M.A. (2020), E-recruitment: A social media perspective. *Asian Journal of Economics Business and Accounting*, 16(4), 51-62.
- Hughes, C., Robert, L., Frady, K., Arroyos, A. (2019), Artificial intelligence, employee engagement, fairness, and job outcomes. In: *Managing Technology and Middle-and Low-Skilled Employees*. England: Emerald Publishing Limited. p61-68.
- Ilyas, K., & Qadir, A. (2024). An examination of the impact of artificial intelligence on human resource management. *Academy of Marketing Studies Journal*, 28(4), 1–11.
- Jatoba, M.N., Gutierriz, I.E., Fernandes, P.O., Teixeira, J.P., Moscon, D. (2019), Artificial Intelligence in the Recruitment Selection: Innovation and Impacts for the Human Resources Management. In: 43<sup>rd</sup> International Scientific Conference on Economics and Social Development. p96-104.
- Jayaraj, A.M., Gowrishankar, V., Sarasu, A. (2023), New trends in the HR recruitment process and its impact on job seekers. *E3S Web of Conferences*, 449, 03013.
- Johansson, J., & Herranen, S. (2019). The application of artificial intelligence (AI) in human resource management: The current state of AI and its impact on the traditional recruitment process [Doctoral thesis, Jönköping University]. DiVA Portal. <http://www.diva-portal.org/smash/get/diva2:1322478/FULLTEXT01.pdf>
- Johnson, B.A., Cogburn, J.D., Llorens, J.J. (2022), Artificial intelligence and public human resource management: Questions for research and practice. *Public Personnel Management*, 51(4), 538-562.
- Joshi, D.A., Masih, D.J. (2023), Enhancing employee efficiency and performance in industry 5.0 organizations through artificial intelligence integration. *European Economic Letters (EEL)*, 13(4), 300-315.
- Kalff, Y., Simbeck, K. (2025), Explained, Yet Misunderstood: How AI Literacy Shapes HR Managers' Interpretation of User Interfaces in Recruiting Recommender Systems. *ArXiv*. Available from: <https://arxiv.org/abs/2509.06475>
- Kaushal, N., Kaurav, R.P.S., Sivathanu, B., Kaushik, A. (2023), Artificial intelligence and HRM: Identifying future research directions using bibliometric analysis. *Management Review Quarterly*, 73, 455-493.
- Khair, M.A., Mahadasa, R., Tuli, F.A., Ande, J.R.P.K. (2020), Beyond human judgment: Exploring the impact of artificial intelligence on HR decision-making efficiency and fairness. *Global Disclosure of Economics and Business*, 9(2), 163-176.
- Khan, R., Hussain, A., Ahmad, S. (2023), Revolutionizing human resource management: The transformative impact of artificial intelligence (AI) applications. *International Journal of Social Science and Entrepreneurship*, 3(4), 306-326.
- Kong, H., Yin, Z., Baruch, Y., Yuan, Y. (2023), The impact of trust in AI on career sustainability: The role of employee-AI collaboration and protean career orientation. *Journal of Vocational Behaviour*, 146, 103928.
- Lahoti, Y. (2023), Impact of artificial intelligence on human resource management. *Journal for Reattach Therapy and Developmental Diversities*, 6(1), 1655-1664.
- Lu, Y., Zhang, M.M., Yang, M.M., Wang, Y. (2023), Sustainable human resource management practices, employee resilience, and employee outcomes: Toward common good values. *Human Resource Management*, 62, 331-353.
- Malik, N., Tripathi, S.N., Kar, A.K., Gupta, S. (2021), Impact of artificial intelligence on employees working in industry 4.0 led organizations. *International Journal of Manpower*, 43(2), 334-354.
- Mamatha, H., Shalini, N., Rao, D., Mahalakshmi, A.M. (2023), Human resource management in hospitals. In: *A Guide to Hospital Administration and Planning*. Berlin/Heidelberg, Germany: Springer. p51-65.
- Manthena, S.R.L. (2021), Impact of artificial intelligence on recruitment and its benefits. *International Journal of Innovative Research in Engineering and Multidisciplinary Physical Sciences*, 9(5), 1-1.
- Marín Díaz, G., Galán Hernández, J.J., Galdón Salvador, J.L. (2023), Analyzing employee attrition using explainable AI for strategic HR decision-making. *Mathematics*, 11(22), 4677.
- Meimandi, K.J., Aránguiz-Dias, G., Kim, G.R., Saadeddin, L., Griffith, A., Kochenderfer, M.J. (2025), The Measurement Imbalance in Agentic AI Evaluation Undermines Industry Productivity Claims. [arXiv Preprint].
- Meshram, R. (2023), The role of artificial intelligence (AI) in the recruitment and selection of employees in the organisation. *Russian Law Journal*, 11(9S), 322-333.
- Morandini, S., Fraboni, F., De Angelis, M., Puzzo, G., Giusino, D., Pietrantoni, L. (2023), The impact of artificial intelligence on workers' skills: Upskilling and reskilling in organisations. *Informing Science*, 26, 39-68.
- Mueller-Hanson, R. (2015), Is the Annual Performance Review Dead? Society for Human Resource Management. Available from: <https://www.shrm.org/topics-tools/news/employee-relations/annual-performance-review-dead>
- Mukherjee, A., Chang, H.H. (2025), Agentic AI: Autonomy, Accountability, and the Algorithmic Society. [arXiv Preprint].
- Mukherjee, I., Krishnan, L.R.K. (2022), Impact of AI on aiding employee recruitment and selection process. *Journal of the International Academy for Case Studies*, 28, 15.
- Mushtaq, N., Manjiang, X., Bakhtawar, A., Mufti, M.A. (2024), Elevating the influence of HR analytics on organizational performance: An empirical investigation in hi-tech manufacturing industry of a developing economy. *Journal of Chinese Human Resources Management*, 15, 3-40.
- Nawaz, N., Kumari, P.B., Hemalatha, A., Gajenderan, V. (2024), The adoption of artificial intelligence in human resources management practices. *International Journal of Information Management Data Insights*, 4, 100208.
- Nisa, U., Shirazi, M., Saip, M. A., & Pozi, M. S. M. (2025). Agentic AI: The age of reasoning—A review. *Journal of Automation and Intelligence*. Advance online publication. <https://doi.org/10.1016/j.jai.2025.08.003>
- Okeyika, K.O., Ibetu, V.C., Okere, A.I., Umoh, B. (2023), The application of artificial intelligence (AI) in human resource management: Current state of AI and its impact on the traditional recruiting process. *AKU African Journal of Contemporary Research*, 4(3), 127.
- Pan, Y., Froese, F.J. (2023), Understanding the interplay of artificial intelligence and strategic human resource management: A framework and future research Agenda. *Human Resource Management Review*, 33(4), 100924.
- Pandya, S.S., Wang, J. (2024), Artificial intelligence in career development: A scoping review. *Human Resource Development International*, 27(3), 324-344.
- Pathak, S., Solanki, V.K. (2021), Impact of internet of things and artificial intelligence on human resource development. In: *Further Advances in the Internet of Things in Biomedical and Cyber-Physical Systems*. Berlin: Springer. p239-267.
- Pinto, G.B.S., Mello, C.E., Garcia, A.C.B. (2025), Explainable AI in Labor Market Applications. In: *Proceedings of the 17<sup>th</sup> International Conference on Agents and Artificial Intelligence (ICAART 2025)*. Vol. 3. p1450-1457.

- Popo-Olaniyan, O., James, O.O., Udeh, C.A., Daraojimba, R.E., Ogedengbe, D.E. (2022), Future-proofing human resources in the US with AI: A review of trends and implications. *International Journal of Management Entrepreneurship Research*, 4(12), 641-658.
- Pratt, M., Boudhane, M., Taskin, N., Cakula, S. (2021), Use of AI for Improving Employee Motivation and Satisfaction. In: *Educating Engineers for Future Industrial Revolutions: Proceedings of the 23<sup>rd</sup> International Conference on Interactive Collaborative Learning (ICL2020)*. Vol. 2-23. Berlin: Springer International Publishing. p289-299.
- Prentice, C., Dominique Lopes, S., Wang, X. (2020), The impact of artificial intelligence and employee service quality on customer satisfaction and loyalty. *Journal of Hospitality Marketing and Management*, 29(7), 739-756.
- Prikshat, V., Islam, M., Patel, P., Malik, A., Budhwar, P., Gupta, S. (2023), AI-augmented HRM: Literature review and a proposed multilevel framework for future research. *Technological Forecasting and Social Change*, 193, 122645.
- Qamar, Y., Agrawal, R.K., Samad, T.A., Chiappetta Jabbour, C.J. (2021), When technology meets people: The interplay of artificial intelligence and human resource management. *Journal of Enterprise Information Management*, 34(5), 1339-1370.
- Rasheed, M.H., Khalid, J., Ali, A., Rasheed, M.S., Ali, K. (2024), Human resource analytics in the era of artificial intelligence: Leveraging knowledge towards organizational success in Pakistan. *Journal of Chinese Human Resource Management*, 15, 3-20.
- Rathore, S.P.S. (2023), The impact of AI on recruitment and selection processes: Analysing the role of AI in automating and enhancing recruitment and selection procedures. *International Journal for Global Academic Scientific Research*, 2(2), 51-63.
- Raveendra, P.V., Satish, Y.M., Singh, P. (2020), Changing landscape of recruitment industry: A study on the impact of artificial intelligence on eliminating hiring bias from recruitment and selection process. *Journal of Computational and Theoretical Nanoscience*, 17(9-10), 4404-4407.
- Ravirajan, K., Sundarajan, A. (2025), Enhancing Workplace Productivity and Well-Being using AI Agent. [arXiv Preprint].
- 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.
- Roopalatha, N., & Sucharita, K. (2024). Artificial intelligence on human resource management: Innovation, challenges and path forward. *Educational Administration: Theory and Practice*, 30(5), 13686–13698.
- Rožman, M., & Tominc, P. (2024). Navigating Gender Nuances: Assessing the Impact of AI on Employee Engagement in Slovenian Entrepreneurship. *Systems*, 12(5), 145.
- Sadeghi, S. (2024), Employee Well-being in the Age of AI: Perceptions, Concerns, Behaviors, and Outcomes. [ArXiv Preprint].
- Shaikh, F., Afshan, G., Anwar, R.S., Abbas, Z., Chana, K.A. (2023), Analyzing the impact of artificial intelligence on employee productivity: The mediating effect of knowledge sharing and well-being. *Asia Pacific Journal of Human Resources*, 61(4), 794-820.
- Štaffenová, N., Kucharčíková, A. (2024), Human capital management-values, competencies, and motivation-concerning Industry 4.0. *Economic Research Ekonomiska Istraživanja*, 37(1), 2324160.
- Stone, D.L., Lukaszewski, K.M., Johnson, R.D. (2024), Will artificial intelligence radically change human resource management processes? *Organizational Dynamics*, 53, 101034.
- Sucipto, H. (2024), The impact of artificial intelligence (AI) on human resource management practices. *Management Studies and Business Journal (Productivity)*, 1(1), 138-145.
- Talwar, R., Agarwal, P. (2022), Effectiveness of AI tools with respect to the recruitment and selection process. *Global Journal of Enterprise Information System*, 14(4), 15-24.
- Tambe, P., Cappelli, P., Yakubovich, V. (2019), Artificial intelligence in human resources management: Challenges and a path forward. *California Management Review*, 61(4), 15-42.
- Tinguely, M., Lee, E., He, F. (2023), Designing human resource management systems in the age of AI. *Journal of Organization Design*, 12(1), 22.
- Tong, S., Luo, X., Xu, B. (2021), The Janus face of artificial intelligence feedback: Deployment versus disclosure effects on employee performance. *Strategic Management Journal*, 42(9), 1600-1631.
- Tschang, F.T., Almirall, E. (2021), Artificial intelligence as augmenting automation: Implications for employment. *Academy of Management Perspectives*, 35(4), 642-659.
- Ulfa, D., Prihantono, J., Annas, M. (2022), Impact of Artificial Intelligence on the Recruitment Process. In: *Proceedings of the 4<sup>th</sup> International Conference of Economics, Business, and Entrepreneurship, ICEBE 2021, 7 October 2021, Lampung, Indonesia*.
- Vedapradha, R., Hariharan, R., Shivakami, R. (2019), Artificial intelligence: A technological prototype in recruitment. *Journal of Service Science and Management*, 12(3), 382-390.
- Wang, J., Xing, Z., Zhang, R. (2023), AI technology application and employee responsibility. *Humanities and Social Sciences Communications*, 10(1), 1-17.
- Wright, J., Atkinson, D. (2019), *The Impact of Artificial Intelligence within the Recruitment Industry: Defining a New Way of Recruiting*. London: Carmichael Fisher. p1-39.
- Yawalkar, M.V.V. (2019), A study of artificial intelligence and its role in human resource management. *International Journal of Research and Analytical Reviews*, 6(1), 20-24.
- Zhang, H. (2024), Exploring the impact of AI on human resource management: A case study of organizational adaptation and employee dynamics. *IEEE Transactions on Engineering Management*, 71(99), 14991-15004.