Integrating Artificial Intelligence in Human Resource Management: A Systematic Literature Review

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Article Info	Abstract
	Purpose –This study aims to present a comprehensive literature review on the application of AI in key HR functions, such as recruitment, training, performance evaluation, and performance management. This literature review covers the period from 2020 to 2024 to reflect the latest developments in this field. **Methodology** – A systematic analysis of the literature presents important findings related to the benefits, challenges, and trends of integrating AI into HR practices**.** Research highlights how AI can improve efficiency in the recruitment process through deeper data analysis, identification of potential candidates, and prediction of corporate culture fits. **Findings** –AI can also be used to provide personalized training according to the individual needs of employees, as well as evaluate performance more objectively through real-time data analysis. **Originality** – The contribution of the research results carried out is to provide a better understanding of the role of AI in improving the effectiveness and efficiency of HR management, as well as highlighting future research directions in integrating these technologies more effectively and sustainably.

1. Introduction

Human resource management (HRM) is a vital aspect of the success of modern organizations (Dessler, 2019; Armstrong & Taylor, 2019; Noe et al., 2019; Mathis et al., 2019; Mondy et al., 2019). In an era marked by accelerating technological advancement, it is increasingly

important for organizations to adopt innovative solutions that can increase their efficiency, productivity, and competitive advantage. One solution that attracts attention in the context of HRM is the integration of artificial intelligence (AI) into the human resource management process. Artificial intelligence refers to the ability of computer systems to perform tasks that normally require human intelligence, such as natural language processing, decision-making, and independent learning. Advancements in AI technology have opened up new opportunities for organizations to optimize enterprise HRM processes (Kavanagh et al., 2019; Stone, 2015). By applying AI in various aspects of HRM, such as employee recruitment and selection, employee development, performance management, and HR data analysis, organizations can gain deeper insights, better decision-making, and higher efficiency.

However, while the potential of artificial intelligence in HRM is promising, important challenges and questions also arise. How can organizations utilize AI effectively without neglecting the human aspects of human resource management? How can ethical and privacy issues be addressed in the context of applying AI in HRM? What are the long-term implications of using AI on employment and human resource sustainability?

This study aims to present a comprehensive systematic literature review on the integration of artificial intelligence in human resource management. Through a critical analysis of previous research, this research will identify strengths, weaknesses, and opportunities in the application of AI in HRM. In addition to these general objectives, the specific objectives of the research are. (1) Identify the role of artificial intelligence in various aspects of human resource management, including employee recruitment and selection, employee development, performance management, and HR data analysis; (2) Analyze the strengths and weaknesses of the application of artificial intelligence in HRM; (3) Highlighting the potential and opportunities of using artificial intelligence in improving efficiency, productivity, and strategic decisions in HRM; (4) Identify challenges and barriers associated with the integration of artificial intelligence in HRM, such as ethical issues, data privacy, and impact on human work; (5) Provide guidance and direction for future research in this field, by identifying knowledge gaps that need to be addressed. In addition, this study will fill gaps in the existing literature by underlining specific aspects that need further research.

The novelty of this research lies in a comprehensive and critical approach to integration (AI) in human resource management (HRM) among others. 1) provide a comprehensive systematic literature review on the integration of AI in HRM; 2) identify the strengths and weaknesses of implementing AI in HRM and its impact on efficiency, productivity, and strategic decision-making; 3) the ethical and social implications of using AI in HRM. This research contribution is expected to provide new insights for academics, HRM practitioners, and other stakeholders in understanding the potential and challenges of artificial intelligence integration in human resource management. Blending theoretical and practical perspectives, this article will describe a comprehensive framework to guide AI research and implementation in the context of HRM.

2. Research Method

The research approach used is a systematic literature review. This approach is used because it wants to collect and synthesize relevant literature and analyze existing findings in the domain of AI integration in HRM. By using this approach, researchers can ensure that they collect relevant studies systematically and objectively, and identify trends and knowledge gaps.

In the selection of literature by applying strict inclusion and exclusion criteria to ensure the quality and relevance of studies included in the review by considering factors such as the year of publication, the research methods used, and relevance to the topic covered. Using this approach, it is expected to present a comprehensive and up-to-date literature review on the integration of AI in HRM.

Data analysis conducted in this study is by collecting data sourced from scientific literature published in academic journals, conferences, and other reliable sources. Furthermore, a selection process is carried out by conducting an initial screening based on the title and abstract, then continuing to read thoroughly the selected articles to ensure conformity with the inclusion criteria that have been set. Next, synthesize the findings that are in the literature used and aids.

3. Results and Discussions

In this study, the PICO framework is the use of artificial intelligence (AI) in the context of human resource management (HR). When doing an article search, the keywords used are.

Table 1. Framework PICO

Population	Artificial intelligence
Intervention	The use of artificial intelligence in human resource management
Comparison	Comparison before and after the use of artificial intelligence
Outcomes	The important role of artificial intelligence in human resources

Based on the PICO framework, the focus of this research is the important role of artificial intelligence in human resources. The criteria used are grouped into 4 categories, namely. Category 1: Use of AI in HR Recruitment and Selection; Category 2: Use of AI in HR Development; Category 3: Use of AI in Performance Management; Category 4: Use of AI in Communication and Collaboration Management.

After collecting data from the journal Scopus, researchers used the method PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) which consists of identification, screening, and included. From the results of identification and screening with criteria from the PICO model, journals from 2019-2023, with 4 question criteria, 8 journals were obtained that fit the criteria. Next reading and analyzing the articles presented, the researcher tries to match the articles with the research questions asked, here are the details of Table 2.

Table 2. Previous research

Paper	Summary
Integrating Artificial Intelligence in Human Resource Functions: Challenges and Opportunities; Nordahlia Umar Baki; International Journal of Academic Research in Business and Social Sciences; 2023	Artificial intelligence can be integrated into human resource functions.
Investigation of Human Resources Dimension in Management and Organization Structure of the Effects of Artificial Intelligence; Canan Tiftik; 2021	Artificial intelligence-based human resources applications have a solid potential to increase employee productivity and support HR experts to become knowledgeable and trained consultants that increase the success of the employee.
Artificial Intelligence Use in Human Resources Management: Strategy and Operation's Impact	Artificial intelligence technologies that automate and augment the workforce could be

Paper	Summary
S. Achchab; 2021 IEEE 2nd International Conference on Pattern Recognition and Machine Learning (PRML); 2021	the key to solving some of the thorny issues and increased demands for HR to accomplish more with fewer resources.
The Role of Artificial Intelligence in the Automation of Human Resources; Anjali Rai; Advances in Marketing, Customer Relationship Management, and E-Services; 2022	AI has the power to change various employee skills through quick and accurate processing of a large amount of data from recruitment to talent management.
Artificial Intelligence in Human Resource Practices with Challenges and Future Directions; Himani Saini; Handbook of Research on Innovative Management Using AI in Industry 5.0; 2022	Artificial intelligence is an indispensable part of organizational practices.
Research on the Intelligent Human Resource Management Information System Zhongqiu Cao; International Conference on E-Learning, E-Business, Enterprise Information Systems, &; E-Government; 2010	The ways enterprises use affects the work efficiency a lot.
Human Resource Management Under the Impact of Artificial Intelligence; Meina Chen; 2019	Artificial intelligence and machine learning will provide enterprises with more humanized and valued human resources services.
Impacts of Artificial Intelligence in Human Resource Management; N. Nishad; 2019A	Artificial intelligence helps HR professionals do their work in easier ways.

RQ1: The Use of AI in HR Recruitment and Selection.

Studies in this category have found that the use of AI in HR recruitment and selection has several potential advantages. AI can improve process efficiency by automating tasks such as CV analysis, psychometric tests, and virtual interviews. In addition, AI can also help reduce human subjectivity bias in the selection process, thereby increasing fairness and objectivity. One of the key findings of this systematic literature review is that the use of AI in HR management can provide a variety of benefits to organizations. Empirical studies analyzed show that AI can help improve efficiency in the process of recruitment, selection, and placement. For example, AI can be used to sift through and assess thousands of job applications quickly and efficiently, allowing HR to focus on those candidates that best fit the company's needs (Chen et al., 2020). Empirical studies show that the use of AI technologies, such as machine learning algorithms and massive data analysis, has enabled organizations to automate various administrative tasks in HR management, including employee recruitment, selection, and training (Choudhury et al., 2019). Thus, this has freed up valuable time and human resources to focus on more strategic activities and added value to the organization.

RQ2: Use of AI in HR Development

Studies in this category show that the use of AI in HR development has significant implications. AI can facilitate the personalization of learning, provide timely feedback, and recommend relevant training content. This can increase the effectiveness and efficiency of the employee learning process. The use of AI can also improve accuracy in HR decision-making. Using machine learning algorithms and predictive analytics, HR can make more informed decisions about performance management, career development, and employee compensation. Research by Minbaeva et al. (2021) highlights that the use of AI in HR management can help organizations reduce subjective bias and increase objectivity in decision-making processes.

Studies by Morikawa et al. (2020) show that the use of AI in HR decision-making has helped organizations to reduce subjective bias and improve accuracy in employee assessments. Aside from an organizational perspective, the integration of AI in HR management can also provide benefits for employees. The studies analyzed show that AI can be used to provide more timely and personalized feedback to employees about their performance, as well as to offer career development recommendations that better match individual interests and expertise. This helps increase employee motivation and engagement, as well as strengthen the relationship between employees and management (Nagai et al., 2019). In addition, AI can also provide career development recommendations that are more in line with individual interests and expertise, which helps increase employee motivation and engagement (Davenport et al., 2018).

RQ3: Use of AI in Performance Management

Studies in this category show that the use of AI in performance management can provide significant benefits. AI can assist in objective performance appraisals, provide more timely and personalized feedback, and recommend appropriate career development programs. This can improve fairness, transparency, and better decision-making in performance management. Although AI can improve efficiency and productivity in some aspects of HR management, there are concerns that this could reduce the need for human workers in the long run. Therefore, organizations need to consider the social and economic impact of the integration of AI in HR management, as well as to develop strategies that enable harmonious cooperation between humans and machines (Davenport &; Ronanki, 2018). However, the use of AI in performance management can also have an impact on employees and organizations. Some employees may experience anxiety related to intensive supervision and automated decision-making. In addition, the implementation of AI in performance management also requires a change in organizational culture and strong involvement of management to ensure acceptance and success.

RQ4: Use of AI in Communication Management and Collaboration

Studies in this category show that AI can play an important role in improving communication and collaboration between employees. Some examples of AI use include the use of chatbots to support internal communication, sentiment analysis to understand employee needs, and knowledge management to share relevant information. The use of artificial intelligence (AI) in communication management and collaboration has created a significant transformation in the modern business sphere. AI enables companies to optimize the flow of information, facilitate more efficient collaboration, and accelerate decision-making. Research conducted by Kudyba and Hoptroff (2021), highlights how AI has increased productivity through real-time data analysis to optimize communication and collaboration among teams. In addition, research from Schlagwein et al. (2023) shows that AI can be used to more efficiently manage employee workloads, taking into account individual preferences and work patterns to organize schedules and tasks automatically.

Challenges and Barriers in the Integration of AI in HRM

The main challenge is the issue of privacy and ethics in the use of employee data. By collecting and analyzing employee data using AI technology, organizations must ensure that the use of such data is done ethically and in compliance with applicable privacy regulations (Acquisti et al., 2019). In addition, there are also concerns about the potential replacement of human workers by AI technologies, which points to the need to consider the social and economic impact of AI

integration in HR management. Organizations need to ensure that the use of employee data is done ethically and in compliance with applicable privacy regulations (Martin et al., 2020). In addition, there are also concerns about the potential replacement of human workers by AI technology. Although AI can improve efficiency and productivity in some aspects of HR management, there are concerns that this could reduce the need for human workers in the long run. Therefore, organizations need to consider the social and economic impact of the integration of AI in HR management, as well as to develop strategies that enable harmonious cooperation between humans and machines (Davenport & Ronanki, 2018).

4. Conclusions

Based on the results and discussion of this study, it can be concluded that the use of AI in HR Recruitment and Selection provides advantages and potential of AI in the HR recruitment and selection process including increasing efficiency, reducing human subjectivity bias, and increasing fairness and objectivity. In addition, AI in HR development has implications for the use of AI in HR development including personalized learning, timely feedback, and recommendations of relevant training content; Ethical and privacy perspectives need to be considered in the use of AI in HR development.

The use of AI in performance management includes objective performance appraisals, timely feedback, and career development program recommendations; The impact on employees and organizations needs to be considered, including employee anxiety related to intensive supervision and automated decision-making. Next to AI in communication management and collaboration, AI's role in improving communication and collaboration includes the use of chatbots, sentiment analysis, and knowledge management.

Challenges and barriers to the integration of AI in HRM, namely factors that influence the acceptance and implementation of AI in HRM include employee trust, organizational ability to manage change, availability of resources, and related regulations. Implications for practitioners and decision-makers include changes in the duties and roles of HR professionals and attention to the ethics of using AI.

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