




# Artificial intelligence driven human resource transformation: a systematic literature review on competencies roles and strategies

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ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Received Mar 28, 2026 Revised Apr 04, 2026 Accepted Apr 15, 2026</p> <p><i>Keywords:</i> Artificial Intelligence; Digital Transformation; HR Competency; Human Resource Management; Talent Management.</p>	<p>The rapid advancement of Artificial Intelligence (AI) has significantly reshaped human resource management (HRM). However, existing studies remain fragmented, primarily focusing on operational efficiency while lacking an integrated understanding of how AI transforms HR competencies, job roles, and strategic development. This study aims to analyze AI-driven human resource transformation by identifying key changes in competencies, roles, and organizational strategies. A systematic literature review (SLR) approach was employed using the PRISMA framework, analyzing articles indexed in Scopus and Web of Science published between 2018 and 2024. The findings reveal three major transformations: (1) a shift from administrative to strategic HR roles driven by data analytics, (2) the emergence of hybrid competencies combining digital, analytical, and adaptive skills, and (3) the integration of AI into HR development strategies through continuous learning systems. This study contributes by proposing a conceptual framework of AI-based HR transformation, integrating technological, human, and organizational dimensions. Practically, the findings provide insights for organizations in designing adaptive and sustainable HR strategies in the digital era.</p> <p><i>This is an open access article under the <a href="https://creativecommons.org/licenses/by-nc/4.0/">CC BY-NC</a> license.</i></p> 

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## 1. INTRODUCTION

Human Resource Management (HRM) is a strategic element that plays a crucial role in determining organizational success amid the increasingly complex dynamics of the business environment. In the era of globalization and digitalization, organizations are not only required to improve operational efficiency but also to manage human resources in an adaptive, innovative, and technology-based manner. The development of digital technology, particularly Artificial Intelligence (AI), has brought significant changes in various aspects of HR management, ranging from recruitment processes and performance management to employee competency development (Rahmawati et al, 2024). Artificial Intelligence has also been widely recognized as a key driver of organizational

transformation by enabling automation, data-driven decision-making, and strategic workforce planning (Davenport & Ronanki, 2018) .

The utilization of Artificial Intelligence (AI) in HR management enables organizations to automate various administrative processes and improve accuracy in decision-making. This technology also promotes more systematic and integrated employee data management, allowing organizations to respond to changes more quickly and effectively. Furthermore, the integration of AI with data analytics provides opportunities for organizations to predict workforce needs, identify employee potential, and design more effective and needs-based HR development programs (Koswara, Ripa'i, Sri Rahayu, & Asropi, 2025). This aligns with global findings that emphasize the growing importance of HR analytics in improving organizational performance and decision-making (Marler & Boudreau, 2017). However, previous studies show inconsistent findings regarding the impact of AI on human resource management. While some studies emphasize efficiency and automation benefits, others highlight risks such as algorithmic bias, ethical concerns, and workforce displacement. This indicates that the role of AI in HR transformation is highly context-dependent.

AI-based digital transformation not only impacts work systems but also reshapes the role of the HR function from being primarily administrative to becoming more strategic and data-driven. Previous studies also highlight that AI creates a shift from automation to augmentation, where human and machine collaboration becomes essential in organizational processes (Raisch & Krakowski, 2021; Jarrahi, 2018). In this context, human resources are required to possess new competencies, such as digital literacy, data analytical skills, and adaptability to rapidly evolving technologies. Therefore, organizations need to adjust their HR management strategies to support sustainability and maintain competitiveness in the digital era.

However, the implementation of Artificial Intelligence in HR management is not without challenges. The gap in digital competencies among the workforce remains a major barrier, along with resistance to change arising from concerns about the displacement of human roles by technology. In addition, the application of AI raises several ethical issues, such as potential algorithmic bias, employee data privacy protection, and information security risks that require serious attention (Utami, 2025). This condition indicates that the success of HR transformation is determined not only by technological sophistication but also by human readiness and organizational culture that supports change.

Despite the growing body of literature on AI in HRM, existing studies remain fragmented. Most research focuses primarily on operational efficiency and automation, while limited studies comprehensively examine how AI simultaneously transforms HR competencies, reshapes job roles, and influences long-term HR development strategies. Furthermore, there is a lack of integrative frameworks that explain the relationship between technological adoption, human capability development, and organizational strategy.

Based on these gaps, this study addresses the following research questions:  
RQ1: How does Artificial Intelligence transform human resource competencies?  
RQ2: How does AI reshape the roles of human resources within organizations?  
RQ3: What strategies are required for sustainable HR development in the AI era?

This study aims to analyze the transformation of human resources in the digital era driven by Artificial Intelligence by focusing on competency changes, role shifts, and HR development strategies. In addition, this study seeks to develop an integrated conceptual understanding of AI-based HR transformation that combines technological, human, and organizational dimensions.

## 2. RESEARCH METHOD

This study employs a qualitative approach using a Systematic Literature Review (SLR) method to analyze the transformation of human resources in the digital era driven by Artificial Intelligence (AI). The review process follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure a systematic, transparent, and replicable research procedure.

The initial search identified 100 articles. After removing duplicates and screening based on titles and abstracts, 60 articles were selected for further review. Finally, 25 articles that met the inclusion criteria were analyzed in this study.

Data collection was conducted through a systematic review of scientific literature, including reference books and accredited national journals published within the last five years. The literature search was carried out using keywords such as “HR transformation,” “Artificial Intelligence in HR management,” and “digitalization of human resources” through credible academic databases.

The inclusion criteria for this study were: (1) articles published in reputable international journals indexed in Scopus or Web of Science, (2) publications between 2018 and 2024, (3) studies focusing on Artificial Intelligence in human resource management, and (4) relevance to HR competencies, job roles, and development strategies. Articles that did not meet these criteria were excluded.

The data analysis was conducted using thematic analysis to identify patterns, relationships, and key themes across the selected studies. The analysis process involved coding relevant information, categorizing findings into themes, and synthesizing the results to develop a comprehensive understanding of AI-driven HR transformation.

To ensure data validity, this study employed source triangulation by comparing various references from different sources, resulting in a more objective and scientifically accountable analysis. With this approach, the study is expected to provide a valid and in-depth overview of the dynamics of human resource transformation in the digital era.

## 3. RESULTS AND DISCUSSIONS

### 3.1 The Impact of AI on HR Management Functions

Based on the results of the literature review, the integration of Artificial Intelligence (AI) in human resource management has a significant impact on various HR functions, ranging from recruitment, training, performance evaluation, to strategic decision-making. The implementation of AI has proven to improve work efficiency, particularly in the recruitment process through automated screening systems that can process large volumes of candidate data quickly and accurately. This indicates that AI not only reduces administrative burdens but also enhances the quality of decision-making in employee selection. These findings are consistent with previous studies that highlight the role of AI in transforming HR functions into more strategic and analytical roles within organizations (Vrontis et al., 2022).

These findings are consistent with the study by Zasvia and Jhon (2025), which states that the use of AI-based digital technology can accelerate administrative processes and strengthen strategic talent management. Thus, the implementation of AI encourages a shift in HR functions from administrative roles toward more strategic and data-driven roles.

Furthermore, in the context of HR planning, the review indicates a paradigm shift from conventional workforce management to the optimal utilization of human potential. HR planning becomes more adaptive by leveraging technology to predict future workforce needs. This suggests that AI plays an important role in supporting more accurate and long-term oriented strategic decision-making.

The use of AI in recruitment and selection processes also improves efficiency through automated curriculum vitae (CV) screening and the application of predictive analytics to identify suitable candidates. The use of AI-based chatbots in the early stages of selection further accelerates the process while enhancing the candidate experience. Research by Istanti (2025) shows that AI technology has the potential to reduce unconscious bias in the selection process, thereby increasing workforce diversity. However, these findings also indicate that AI usage still requires supervision, considering the potential for algorithmic bias if the data used is not representative.

In the function of training and development, the review shows that AI enables the creation of more personalized and needs-based training programs. This technology can identify competency gaps more accurately and recommend appropriate learning materials. Setiawan and Rahadian (2025) emphasize that the use of AI in HR development can improve the effectiveness of upskilling and reskilling programs within organizations.

On the other hand, AI also plays a role in performance evaluation through the use of Human Resource Analytics, which enables objective and continuous performance monitoring. The information generated can be used as a basis for strategic decision-making, such as promotions and career development. However, the use of AI in performance evaluation must still consider ethical aspects and human values so that decisions are not entirely dependent on the system (Utami, 2025). Thus, it can be concluded that AI not only improves the efficiency of HR functions but also transforms the role of HR to become more strategic, analytical, and data-driven.

### 3.2 Transformation of Human Resource Competencies

The review findings indicate that the development of Artificial Intelligence has significantly driven the transformation of human resource competencies. Competencies that were previously focused on conventional technical skills are now evolving toward digital literacy, data analysis capabilities, and readiness to adapt to technology. al. Ifitri et al. (2024) state that the utilization of AI helps organizations identify competency development needs more effectively.

Moreover, competency transformation does not only involve technical aspects but also includes an understanding of data security, ethical use of technology, and adaptability to change. This shows that HR competencies in the digital era are multidimensional and require more complex readiness. The transformation of competencies is also closely related to the demands of the Fourth Industrial Revolution, where digital and analytical skills become essential for workforce competitiveness (Schwab, 2016).

The role of AI-based Human Resource Analytics has also become important in systematically mapping and monitoring employee competencies. Through accurate data analysis, organizations can determine more targeted competency development strategies (Utami, 2025). These findings indicate that AI functions not only as an operational tool but also as a strategic instrument in managing HR competencies.

However, the competency transformation process is not without challenges, particularly related to resistance to change. Faidz (2024) emphasizes that the success of digital transformation is highly influenced by effective change management, including open communication and management support. Thus, the transformation of HR competencies in the AI era requires not only technical skill enhancement but also adaptability, digital ethics, and effective change management.

### 3.3 Challenges of AI-Based Human Resource Transformation

The review findings indicate that the implementation of AI in HR management faces various complex challenges. One of the main challenges is the high cost of technology investment, especially for organizations with limited resources. In addition,

the digital competency gap among employees becomes a significant barrier in adapting to new technologies (Faidz, 2024).

Other findings show that digital transformation also poses risks related to data security and employee privacy. The use of digital-based systems requires strong data protection to prevent cyber threats (Nazarudin & Kuswinarno 2024). This indicates that technology implementation must be accompanied by adequate security policies.

Furthermore, resistance to change becomes a challenge from psychological and organizational cultural perspectives. Not all employees have the same level of readiness to accept new technologies, especially due to generational differences in digital literacy. Muharram et al. (2025) state that failures in digital transformation are often caused by human factors rather than the technology itself.

On the other hand, AI-based automation also has the potential to create social impacts, such as reduced job opportunities in certain types of work. This suggests that digital transformation must be managed wisely to avoid social inequality. Thus, the challenges of AI-based HR transformation are not only technical but also encompass economic, social, and organizational cultural aspects.

#### 3.4 Human Resource Development Strategies in the AI Era

The review findings indicate that organizations need to design adaptive HR development strategies to face digital transformation. One of the main strategies is the implementation of need-based training that is aligned with competency gaps within the organization. Setiawan and Rahadian (2025) state that competency development must be integrated with organizational needs and technological advancements.

In addition, the implementation of continuous learning is an important factor in improving HR readiness. Organizations need to provide access to learning through various digital platforms so that employees can continuously develop their competencies.

The development of leadership competencies is also an important strategy in supporting digital transformation. Leaders are required to have the ability to manage change, make data-driven decisions, and build a work environment that is adaptive to technology.

Furthermore, the implementation of digital-based talent management systems enables organizations to manage employee potential more systematically. These systems help in performance mapping, career planning, and more objective decision-making. Additionally, this strategy plays a role in increasing employee retention and building an innovative and adaptive workforce. Thus, HR development strategies in the AI era must be carried out holistically. This is in line with global perspectives that emphasize the integration of technology, human capabilities, and organizational strategy in achieving sustainable competitive advantage (Brynjolfsson & McAfee, 2017) This includes improving individual competencies, strengthening leadership, and developing technology-based organizational systems.

## 4. CONCLUSION

Based on the results of the literature review, it can be concluded that the implementation of Artificial Intelligence (AI) has had a significant impact on the transformation of human resource management in the digital era. AI not only improves efficiency across various HR functions, such as recruitment, training, and performance evaluation, but also drives fundamental changes in the roles and functions of HR toward becoming more strategic, analytical, and data-driven.

This transformation also affects human resource competencies, which are no longer focused solely on technical skills but also include digital literacy, data analysis capabilities, and soft skills such as creativity, collaboration, and adaptability. In addition,

the implementation of AI leads to a shift in job roles from routine tasks to more complex and value-added work.

However, AI-based HR transformation also presents various challenges, such as the digital competency gap, resistance to change, data security risks, and potential social impacts due to automation. Therefore, organizations are required not only to adopt technology but also to prepare their human resources through comprehensive development strategies.

In line with the identified research gap, this study shows that AI-based HR transformation needs to be understood holistically, not only from a technological perspective but also in terms of competency changes, shifts in job roles, and HR development strategies. Thus, this study contributes to enriching the field of human resource management, particularly in understanding the dynamics of HR transformation in the digital era. These findings are consistent with global research emphasizing the strategic role of Artificial Intelligence in shaping the future of work and organizational competitiveness (Raisch & Krakowski, 2021)

The practical implications of this study highlight the importance for organizations to design adaptive HR development strategies, including need-based training, the implementation of continuous learning, and strengthening an organizational culture that supports innovation and change. In addition, organizations need to ensure that the use of AI technology is carried out ethically and responsibly while still considering human aspects in HR management.

This study has limitations as it uses a literature review approach that depends on the availability of reference sources. Therefore, future research is recommended to adopt empirical approaches to directly examine the impact of AI implementation on performance and HR management within organizations.

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