

The Impact of Artificial Intelligence on the Development of Human Resource Management: An Analytical Study

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Abstract :

This study aims to analyze the impact of artificial intelligence (AI) on the development of human resource management (HRM) by examining its theoretical foundations, functional applications, organizational benefits, and risks associated with the use of intelligent systems throughout the employee life cycle. The study adopts a descriptive-analytical approach based on a review and analysis of a number of recent scholarly studies and literature addressing AI in recruitment and selection, training, performance management, workforce planning, and talent management, in addition to literature related to generative AI. The analysis indicates that AI can contribute to automating repetitive tasks, accelerating information processing, supporting decision-making, improving the personalization of learning programs, and expanding workforce analytics capabilities. However, these benefits do not materialize automatically; rather, they depend on data quality, clarity of objectives, algorithmic transparency, privacy protection, human oversight, and ethical governance. Recent literature also indicates that the impact of AI on work is not limited to substitution, but largely involves the redistribution of tasks and changes in the nature of jobs. Accordingly, the study concludes that developing HRM through AI requires an integrated model combining technology, human expertise, and responsible governance, together with investment in digital skills and change management.

Keywords: Artificial Intelligence; Human Resource Management; Smart Recruitment; Human Resource Analytics; Generative Artificial Intelligence; Governance; Decision-Making.

1. Introduction:

In recent years, human resource management has gradually shifted from a focus on traditional administrative functions toward roles more closely associated with data, analytics, and strategic workforce planning. This shift has coincided with the rapid development of artificial intelligence, machine learning, natural language processing, and generative artificial intelligence. Organizations can now use tools capable of processing large volumes of data, identifying patterns, automating certain procedures, and providing recommendations that assist HR professionals in decision-making.

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The introduction of AI into HRM does not necessarily mean that human jobs will disappear. Specialized literature points to a gap between the theoretical promises of intelligent technologies and the complexities of their actual implementation in HR, owing to the nature of human behavior, the difficulty of measuring certain organizational phenomena, data limitations in some cases, and questions of fairness, accountability, and employee responses to algorithmic decisions (Tambe et al., 2019).

The issue has become increasingly important with the spread of generative AI, which is capable of producing texts, analyzing information, drafting content, and interacting in natural language. A recent systematic review covering 115 studies showed that applications of ChatGPT in HRM extend to human resource planning, recruitment, training and development, compensation, and performance management (Cheng & Li, 2025).

In this context, the present study analyzes the relationship between AI and the development of HRM, with a focus on how intelligent applications can be deployed across different HR functions and on the organizational, technical, and ethical conditions necessary to achieve sustainable value.

2. Research Problem and Questions:

The central research problem lies in determining how AI can develop HRM without causing traditional problems to be transferred into digital systems or creating new risks related to bias, privacy, and accountability. Although algorithms can accelerate certain processes and analyze extensive datasets, decisions concerning individuals remain social, organizational, and legal in nature.

Accordingly, the main research question can be formulated as follows: To what extent does AI contribute to the development of HRM, and what are the main opportunities and challenges associated with its implementation?

The main question gives rise to the following sub-questions: What is meant by AI in the context of HRM? What are its main applications in recruitment, training, performance management, and planning? What are its potential effects on efficiency and decision quality? What requirements are necessary for its responsible use?

3. Objectives of the Study:

- To identify the basic concepts of artificial intelligence and human resource management.
- To analyze the main applications of AI in HR functions.
- To identify the potential organizational benefits of AI.
- To analyze the ethical, organizational, and technical challenges associated with reliance on algorithms.
- To propose practical requirements for adopting AI in HR in a responsible and sustainable manner.

4. Significance of the Study:

The scientific significance of this study stems from the fact that AI has become an interdisciplinary topic involving HRM, information systems, strategic management, and professional ethics. The study helps organize this relationship by bringing together applications, opportunities, and challenges within a single analytical framework.

Its practical significance lies in helping HR professionals view AI as a tool for supporting human work and redesigning processes, rather than merely as a means of automation.

5. Methodology and Scope of the Study:

The study adopts a descriptive-analytical approach through a review and analysis of relevant scientific literature and institutional reports concerning AI and HRM. The focus is placed on studies addressing AI applications in recruitment and selection, training, performance management, workforce planning, and talent management, in addition to recent literature on generative AI.

The study is limited by its analytical rather than empirical nature; therefore, its findings cannot be generalized to all organizations or sectors without taking differences in legal, cultural, and organizational contexts into account.

6. Theoretical Framework of Human Resource Management:

Human resource management refers to a set of policies and practices that regulate the relationship between an organization and its employees, beginning with workforce planning, recruitment, and selection, continuing through training and development, performance management, and compensation, and extending to talent retention and termination of the employment relationship.

Traditional HRM relied heavily on experience, paper-based procedures, and direct managerial decisions. With the spread of human resource information systems, data became increasingly prominent in decision-making, and HR analytics subsequently developed to employ descriptive, diagnostic, and predictive methods. AI represents an additional stage that enables the use of machine-learning models and language technologies to identify patterns, generate outputs, and support certain complex tasks. The literature indicates that technological development has increasingly reshaped HRM functions and roles (Stone et al., 2015).

7. The Concept of Artificial Intelligence and Its Relationship with Human Resources

Artificial intelligence refers to a set of computational methods and systems that enable machines to perform tasks that normally require some form of perception, learning, reasoning, or language understanding. In HR, applications include classification, prediction and recommendation models, natural language processing, chatbots, and generative AI.

Generative AI represents a significant transformation because it does not merely analyze or classify data; it can produce texts, summaries, drafts, and answers. In HR, it can be used to prepare job descriptions, draft training materials, summarize policies, and answer frequently asked questions. However, generative outputs may contain errors and should therefore be treated as outputs requiring human review.

The relationship between AI and HRM is based on transforming a significant portion of processes that previously required human time into algorithm-supported processes, while retaining decision-making responsibility at appropriate human levels. Literature reviews have shown that applications extend to recruitment, performance management, learning, talent management, and workforce analytics (Madanchian et al., 2023).

8. Applications of Artificial Intelligence in Human Resource Management Functions

Recruitment and talent acquisition are among the areas in which AI has been most widely used. Organizations may employ systems to process resumes, extract skills, and match candidates with job requirements, in addition to chatbots that answer questions and coordinate appointments. A scoping review showed that applications include scheduling procedures, sending notifications, and carrying out certain transactions, alongside improving efficiency and reducing processing time in some operations (Kallach & Ali, 2024).

In training and development, AI can support personalized learning by analyzing an employee's level and recommending appropriate training content. Generative models can also be used to prepare questions, exercises, summaries, and preliminary educational content, with the need to verify content quality.

In performance management, analytics and algorithms can be used to aggregate performance indicators, identify trends, and help managers detect areas requiring support. However, reducing performance evaluation to a single algorithmic score carries the risk of oversimplifying human performance; therefore, analytics should serve as a tool for review and discussion.

In workforce planning, predictive models help analyze future needs for skills and jobs and examine patterns of turnover and absenteeism. These capabilities support strategic planning, but they depend on data quality and the validity of the underlying assumptions.

In talent management and career pathways, AI can recommend learning opportunities or job transitions based on skills and experience. However, algorithmic recommendations should not confine employees to a single pathway, because career aspirations and personal factors cannot always be reduced to data.

In employee services, chatbots are used to answer questions concerning leave, policies, benefits, and administrative procedures, while ensuring that employees can be transferred to a human employee when a question is sensitive or complex.

Generative AI has also become a general-purpose assistant capable of interacting with a wide range of textual and cognitive tasks. The review by Li and Cheng (2025) illustrates the expanding research on the use of ChatGPT across different HR functions.

9. Potential Positive Impacts:

- Automation can reduce the time employees spend on routine tasks such as data entry, preliminary searches, and responding to repetitive inquiries, thereby redirecting time toward higher-value activities.
- Intelligent analytics can aggregate and connect data and identify patterns that may be difficult to observe manually, thereby supporting managerial discussion and decision-making.
- Digital services and conversational robots can provide faster and more consistent answers to procedural questions, with the possibility of making services available outside working hours.
- AI can be used to personalize learning and career recommendations according to employee needs, provided that data are protected.

- When repetitive administrative work is reduced, HRM can allocate more resources to strategic analysis, skills planning, and change management.

10. Challenges and Risks

Biases present in data or embedded in the design of criteria may be transferred to the system. A recent review indicates that the impact of AI on diversity, equity, and inclusion is dual in nature: it may help standardize procedures, but it may also reproduce bias when data or algorithms are inappropriate (Naoum et al., 2026).

HRM deals with sensitive personal and professional information; therefore, the purpose of data collection should be defined, unnecessary data should be minimized, and access permissions should be controlled.

It may be difficult to determine why a system has produced a particular result, and this problem becomes more sensitive when the result affects recruitment, promotion, or evaluation. Therefore, criteria should be documented and explanations should be provided in an understandable form whenever possible.

The phrase “the algorithm decided” should not become a means of concealing managerial responsibility; the organization remains responsible for designing the system, reviewing it, and monitoring its outcomes.

An algorithm cannot compensate for poor data; incomplete, outdated, or unbalanced data can produce unreliable recommendations.

Employees may perceive AI as a threat to jobs or as a surveillance tool. The literature has identified employee reactions to data-driven decisions as one of the challenges of implementing AI in HRM (Tambe et al., 2019).

Generative models can produce text that appears convincing but is inaccurate. Therefore, outputs should not be adopted without verification, particularly in legal or disciplinary matters.

11. Artificial Intelligence and the Future of Human Resource Jobs

The impact of AI on jobs should be analyzed in terms of tasks rather than job titles alone. A single job may consist of tasks that can be automated and others that require human judgment, communication, and negotiation.

The International Labour Organization's 2025 update indicates that one in four workers globally is in an occupation with some degree of exposure to generative AI, while human input remains necessary in most cases, making job transformation and task restructuring an important focus (Gmyrek et al., 2025).

In HRM, some routine administrative tasks may decline in importance, while skills in data analysis, process design, governance, change management, and employee communication may become more important. Jobs will not all be affected in the same way; the degree of impact depends on the sector, level of digitalization, type of tasks, and maturity of data.

This transformation requires reskilling and upskilling programs, including data analysis, understanding the fundamentals of AI, evaluating output quality, awareness of privacy and cybersecurity, as well as communication, conflict resolution, and leadership skills.

12. AI Governance in Human Resource Management:

Governance begins by identifying the cases in which AI may be used and those that require direct human decision-making. Responsibilities should also be defined, while data and their sources, access rules, and mechanisms for verifying results should be documented.

Human participation does not simply mean that an employee approves the result; the responsible person should be capable of understanding and reviewing outputs and rejecting them when there is an objective reason. There should also be a mechanism for appeal and review. This is consistent with the proposed framework for the ethical use of AI in HRM, which emphasizes assigning an appropriate distribution of responsibility between humans and systems according to the nature of the task (Bankins, 2021).

Responsible use requires testing system performance across different groups, monitoring error rates, and reviewing unusual cases. Testing the model only once is insufficient because data and contexts change.

The principle of data minimization should be adopted, access to information should be restricted, and personal or confidential data should not be entered into unapproved public tools, particularly when using generative AI.

13. Applications of Artificial Intelligence in the Algerian Context:

In the Algerian context, AI can be progressively deployed in HRM, particularly for digitizing employee records, screening resumes, analyzing training needs, monitoring performance, and providing digital services to employees. The success of these applications depends on data quality, employee training, protection of personal data, clear allocation of responsibilities, and human oversight of decisions affecting employees. Intelligent solutions should also be adapted to the specific characteristics of Algerian institutions and their organizational procedures rather than transferring technological models mechanically.

An integrated model can be conceived as consisting of four interconnected elements: technological inputs, including data, digital infrastructure, and tools; administrative processes, including recruitment, training, performance, planning, and services; outcomes, including efficiency, decision quality, and employee experience; and governance, including privacy, fairness, transparency, accountability, and human oversight.

Governance, human oversight, and change management operate as elements accompanying all stages, thereby reducing risks and increasing usability.

14. Review and Analysis of Previous Studies:

The study by Tambe et al. (2019) discussed the gap between the promises of AI and the reality of its use in HRM and identified challenges related to the complexity of human phenomena, the small size of

some datasets, accountability, fairness, and employee reactions. These findings emphasize the importance of not reducing HRM to a computational prediction problem.

Madanchian et al. (2023) reviewed the literature on AI tools and techniques in HRM and demonstrated the diversity of applications across recruitment, performance management, employee engagement, and other areas. A systematic review and bibliometric analysis also showed that the research agenda on AI and HRM includes areas such as recruitment and selection, training, performance management, and talent management (Kaushal et al., 2023).

Kallach and Ali (2024) provided a scoping review of AI applications in HRM and classified the literature according to benefits, challenges, and technology-supported functions.

Cheng and Li (2025) analyzed 115 studies on ChatGPT in HRM and linked adoption factors to processes and outcomes, demonstrating the shift of scholarly attention toward generative AI.

In 2025, the International Labour Organization updated its generative AI exposure index, emphasizing the importance of analyzing task transformation rather than focusing exclusively on the idea of replacement.

Naoum et al. (2026) reviewed 43 peer-reviewed studies on AI, diversity, equity, and inclusion and emphasized the dual nature of the technology and the importance of transparency and human oversight.

15. Discussion of the Findings of Previous Studies:

Comparison of the studies shows that AI adds value when it is used for tasks characterized by repetition, large volumes of data, and the need for rapid processing. By contrast, its suitability decreases when a decision is based on a complex social context or on information that is not easily measurable.

The quality of results does not depend on the model alone. Even an advanced model may produce unfair or inaccurate results if the data are inappropriate or if success indicators are poorly designed. Consequently, data governance becomes part of HRM itself.

Generative AI expands the concept of automation because employees can use a language assistant to prepare documents, summarize information, or generate ideas. This creates a model closer to human-machine collaboration, accompanied by an increasing need to verify information.

Regarding fairness, the literature indicates that AI does not produce a single predetermined ethical outcome; it may help standardize procedures, but it may also reinforce biases present in the data or in system design.

16. Recommendations:

- Develop a written strategy for using AI in HRM that defines objectives, use cases, and responsibilities.

- Begin with low-risk, highly repetitive applications before moving to decisions that have a direct impact on employees.
- Establish mechanisms for reviewing data quality and testing bias and errors before using systems in recruitment or evaluation decisions.
- Provide continuous training for HR professionals, managers, and employees on AI, data, and privacy.
- Adopt the principle of human oversight in sensitive decisions, with a clear right to review and appeal.
- Develop a specific policy for the use of generative AI, including rules governing the entry of confidential data and verification of outputs.
- Document models, data sources, decision criteria, and performance indicators in a manner that allows auditing and review.
- Involve employees in designing new tools and listen to their concerns before expanding their use.
- Regularly update systems and policies because AI capabilities and risks evolve rapidly.
- Encourage empirical studies in Algerian and Arab institutions to measure the impact of AI on performance, satisfaction, fairness, and organizational trust.

17. Conclusion:

The study concludes that AI represents an important transformation in HRM, but it is not an automatic solution to all management problems. The value it can add depends on the organization's ability to select appropriate use cases, build reliable data, provide human skills capable of working with the tools, and establish rules for privacy, fairness, and transparency.

The evidence indicates that the future of HRM will not be based on a simple choice between humans and machines, but rather on designing a more integrated working relationship between them. Technology can process data, generate recommendations, and accelerate certain processes, while humans remain responsible for interpreting context, communicating, and making decisions that require ethical and organizational responsibility.

Accordingly, the adoption of AI should be understood as an integrated organizational transformation project combining technology, data, skills, and governance, while decisions with significant human consequences should be subject to higher levels of transparency, oversight, and review.

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