

## IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE ON RECRUITMENT PROCESS: A LITERATURE REVIEW

Boy Chandra Nababan<sup>1</sup>, Muhammad Dimas Praseyta<sup>2</sup>, Nurul Adelia<sup>3</sup>, Ritha F. Dalimunthe<sup>4</sup>

<sup>1,2,3,4</sup>Magister Ilmu Manajemen, Universitas Sumatera Utara, Indonesia

<sup>1</sup>[Boynababan.106@gmail.com](mailto:Boynababan.106@gmail.com), <sup>2</sup>[Dimasd465@gmail.com](mailto:Dimasd465@gmail.com), <sup>3</sup>[Nuruladelia45@gmail.com](mailto:Nuruladelia45@gmail.com)

### Abstract

Artificial intelligence (AI) has become a transformative force across various fields, including recruitment. Its integration into hiring processes has redefined how organizations identify, evaluate, and retain talent. By offering enhanced efficiency, reduced biases, and better decision-making, AI presents significant advantages in recruitment. The methodology employed in this study is a descriptive qualitative approach, where researchers gather data from various literature sources and utilize qualitative methods, as the data collected is presented in the form of words or descriptions. This literature review examines the implementation of AI in recruitment, focusing on its benefits, risks and ethical concerns, and also practical implications and strategic insights. As the result, AI for recruitment tools provide notable advantages, such as increased efficiency, cost reduction, and better candidate matching. However, they also pose challenges, including algorithmic bias, concerns over job security, and issues related to data privacy.

**Kata kunci:** Recruitment; Artificial Intelligence; Human Resources

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## 1. INTRODUCTION

Artificial intelligence (AI) has become a transformative force across various fields, including recruitment. Its integration into hiring processes has revolutionized traditional methods, providing benefits such as increased efficiency, reduced biases, and improved candidate-job matching. AI technologies like Natural Language Processing (NLP) and machine learning algorithms are utilized to streamline and enhance multiple recruitment stages, from initial screening to final candidate selection.

One of AI's key advantages in recruitment is its capability to manage large datasets effectively. AI systems can swiftly analyze resumes, conduct preliminary screenings, and rank candidates based on their qualifications and job suitability. This automation reduces the time and effort required for these tasks, enabling recruiters to focus on strategic activities. For example, the (Artificial Intelligence Recruiting Model (AIRM) model in Saudi Arabia showcased the power of AI and Natural Language Processing by achieving an impressive 82% accuracy in matching candidates to jobs, while significantly reducing processing time (Aleisa et al, 2023). Similarly, AI-driven tools such as chatbots and gamification techniques have streamlined recruitment processes, making them more engaging and efficient (Allal-Chérif et al, 2021).

AI's capacity to process large datasets and conduct complex analyses has enhanced the fairness and quality of decision-making in recruitment. By leveraging AI, organizations can reduce subjective biases, including favoritism and nepotism, ensuring a fairer selection process (Thakur et al, 2023). AI-based systems assess candidates' skills, experience, and competencies, matching them with job requirements compared to traditional methods (Singh et al, 2020). This not only improves the quality of hires but also enhances employee retention and growth potential (Thakur et al, 2023).

Despite these advantages, the implementation of AI in recruitment poses several challenges. A key concern is the risk of algorithmic bias. While AI can minimize human biases, improper design or non-representative training data may lead to the reinforcement of existing biases (Tsiskaridze, 2023). Additionally, ethical and legal issues, such as data privacy and potential job displacement, pose significant challenges (Tsiskaridze et al, 2023) (Ore et al, 2021). Organizations must address these concerns to ensure the ethical and responsible application of AI in recruitment.

The strategic impact of AI in recruitment is substantial. By leveraging AI technologies, organizations can gain valuable insights into labor market trends and make more strategic hiring decisions (Aleisa et al, 2023). For example, the AIRM model enabled the Saudi government to improve its understanding of the labor market while expediting the recruitment process (Aleisa et al, 2023). Moreover, AI enhances the candidate experience by delivering personalized interactions and prompt feedback, significantly improving the overall recruitment process (Singh et al, 2020).

Looking ahead, AI holds great promise for the future of recruitment, with ongoing advancements in technology and increasing adoption across industries. However, organizations must carefully navigate the complexities of AI implementation. Collaboration between human recruiters and AI tools is essential to maximize AI's potential while mitigating its risks. Continuous monitoring and evaluation of AI systems are critical to ensuring their effectiveness, fairness, and transparency.

In summary, AI's implementation in recruitment offers substantial benefits, including improved efficiency, reduced bias, and enhanced decision-making. However, organizations must address ethical and practical challenges to ensure its responsible use. As AI technologies continue to evolve, they have the potential to further revolutionize recruitment, making it more efficient, equitable, and strategic.

## **2. LITERATURE REVIEW**

### **a. Recruitment**

Human Resources (HR) refers to the department or function within an organization that is responsible for managing all aspects related to employees. This includes recruiting, hiring, training, employee development, compensation, benefits, performance management, and ensuring compliance with labor laws. HR plays a key role in fostering a positive work environment, supporting organizational goals, and aligning workforce strategies with business objectives.

The position of recruitment in Human Resources (HR) is critical as it directly impacts an organization's ability to attract and hire the right talent. Recruitment serves as the first step in the HR lifecycle and is closely linked to other HR functions such as workforce planning, talent management, and employee retention.

Recruitment is the process of identifying potential candidates and motivating them to apply for positions within an organization (Saikumari et al, 2023). Its goal is to attract a pool of qualified applicants who meet the organization's Requirement. The primary aim is to hire the right number of employees with the necessary skills and qualifications to support the organization in achieving its objectives (Rao et al, 2011). Recruitment is a crucial process for any organization, encompassing the identification, attraction, and selection of the most suitable candidates. Well-executed recruitment strategies are vital in hiring the right individuals, which has a direct impact on the organization's performance and growth. This process involves several stages, ranging from recognizing staffing needs to screening and choosing the ideal candidates.

### **b. Artificial Intelligence**

Artificial Intelligence (AI) is a broad field dedicated to developing machines and systems that can perform tasks usually requiring human intelligence. These tasks involve reasoning, learning, problem-solving, and adapting to new situations, either autonomously or with minimal human intervention (Coleman, 2020). Artificial Intelligence (AI) in recruitment refers to the use of AI technologies to automate, optimize, and enhance various stages of the hiring process. By leveraging machine learning algorithms, natural language processing (NLP), and data analytics, AI can help organizations identify, screen, and select candidates more efficiently and objectively.

Artificial Intelligence is a fast-growing field focused on replicating human intelligence in machines. It includes a variety of technologies and applications that enhance different industries. Although AI offers significant potential, it is crucial to address its limitations and ethical concerns to ensure its ongoing development and seamless integration into society.

**c. Human-Machine Collaboration**

Human-machine collaboration in AI-based recruitment is an important area of research, particularly in exploring how AI can be integrated into decision-making while ensuring fairness, transparency, and accountability. A key concept in this context is Human-Centric Machine Learning, which stresses the importance of developing AI applications with a focus on social good, privacy, data ownership, transparency, accountability, and fairness in decision-making (Pena et al, 2023). These principles ensure that AI systems collaborate effectively with humans, improving decision-making without introducing bias or discrimination. In recruitment, the FairCVtest case study exemplifies how AI can unintentionally reinforce biases present in training data. This case underscores the need for methods to eliminate sensitive data and biases from AI decision-making processes, promoting fairness and equity (Pena et al, 2023). Human oversight in these systems is essential to reduce the risk of biased outcomes and build trust in AI-driven recruitment tools.

**d. Decision-Making Theories in AI**

Decision-making theories in AI, particularly within the recruitment context, examine how AI and human decision-makers can collaborate in a multistage process. A study on procedural justice in AI-human collaborations reveals how the sequence of decision-making (AI-human vs. human-AI) influences perceptions of fairness and justice (Jiang et al, 2023). Building on person-environment fit theory and algorithm reductionism, the research suggests that individuals view a decision-making process with a human-AI sequence as having a poorer AI ability-power fit compared to an AI-human order. This perception leads to lower procedural justice, highlighting that the order in which AI and humans make decisions significantly affects how fair the process is perceived to be.

Additionally, the study found that the perceived competence of AI can mitigate the negative effects of the decision-making order on procedural justice. This highlights the importance of designing AI systems that are not only technically capable but also perceived as competent by human collaborators (Jiang et al, 2023). Ensuring AI systems are recognized as capable and fair decision-makers is crucial for their successful integration into recruitment processes.

### **3. METHODOLOGY**

This article adopts a literature review approach to explore the subject matter in depth. The primary purpose of a literature review is to address a specific issue by thoroughly analyzing relevant materials available in libraries. This involves gathering data and information from various library sources, which serve as a rich repository for generating new insights and ideas. By leveraging existing knowledge, literature reviews facilitate the creation of innovative theoretical frameworks or provide a solid basis for addressing problems.

The sources examined for this review include books, research findings, academic journals, and other scholarly articles. The process of conducting the literature review involves several key steps:

- a. Identifying sources that are relevant and aligned with the research topic;
- b. Critically analyzing the content of these sources, including their underlying assumptions and limitations that shape their theoretical perspectives;
- c. Summarizing the key findings from the literature; and finally, synthesizing new insights and perspectives on the research topic to establish a conceptual framework that can guide future studies

#### **4. RESULTS AND DISCUSSION**

Human Resources (HR) refers to the department or function within an organization that is responsible for managing various aspects related to the employees, their well-being, development, and their relationships with the organization. HR is essential in ensuring that an organization has the right people with the right skills in place to achieve its goals and objectives. In recruitment process, there are 2 method, as known: Traditional Method and Modern Methods.

Traditional recruitment refers to the conventional methods used by organizations to identify, attract, and select candidates for job positions. These methods are typically more manual and have been the foundation of recruitment processes for many years. While some of these methods have been replaced or enhanced by modern technology, they continue to play a significant role in many organizations, especially in smaller businesses or industries with less access to advanced technological tools.

Modern recruitment methods leverage technology and data-driven strategies to streamline the hiring process, enhance the candidate experience, and improve the quality of hires. These methods are increasingly being used to adapt to the evolving demands of the workforce and to address challenges such as the talent shortage, diversity, and the need for a faster, more efficient hiring process. Modern recruitment methods and technology provide significant benefits in terms of efficiency and data-driven decision-making, challenges remain in ensuring fairness, transparency, and diversity. It is essential for organizations to continually assess and refine their recruitment practices, incorporating human judgment alongside technology to ensure the best possible outcomes for both candidates and the organization.

AI is one of the technologies that can be used in modern methods of recruitment. Integrating AI into recruitment requires a Human-Centric approach to guarantee fairness, transparency, and accountability. Theories on human-machine collaboration and decision-making emphasize the significance of the sequence in which AI and humans engage during decision-making. It is essential that AI systems are seen as competent and fair to uphold procedural justice and maintain trust in AI-powered recruitment tools. The incorporation of artificial intelligence (AI) in recruitment has grown significantly, presenting both potential advantages and challenges. This summary highlights the main insights from recent studies on AI-powered recruitment tools, emphasizing their benefits, risks, and the impact they have on human resource management (HRM).

##### **a. Benefit of AI in Recruitment**

There are several benefits of implementing AI in the recruitment process, they are:

##### **1. Efficiency and Cost Savings**

AI-driven recruitment strategies, including automated resume screening, candidate matching, and the use of chatbots, enhance efficiency and lower costs by streamlining routine tasks and accelerating the hiring process (Tsiskaridze et al, 2023), (Fraij and László, 2021), (Albassam, 2023).

##### **2. Improved Candidate Matching**

AI tools like the AIRM model improve the precision of matching candidates to job openings, delivering high accuracy and surpassing human recruiters in terms of task completion speed (Aleisa et al, 2023).

##### **3. Reduction of Bias**

AI can reduce subjective biases, such as nepotism and favoritism, in the hiring process, fostering a more impartial and equitable candidate selection (Thakur et al, 2023)

##### **4. Enhanced Candidate Experience**

AI-driven tools, such as video interviews and virtual reality assessments, create a more interactive and efficient experience for candidates, which can encourage them to complete job applications (Albassam, 2023), (Esch, 2019)

## **b. Risks and Ethical Concerns**

There are several risks and ethical concerns in the recruitment process, they are:

### **1. Algorithmic Bias and Discrimination**

Although AI has the potential to minimize human bias, improperly designed or monitored systems may sustain or amplify existing biases, leading to substantial ethical and legal issues (Albassam, 2023), (Ore et al, 2021).

### **2. Job Security for Recruiters**

Automating recruitment tasks may raise concerns about job displacement among HR professionals, though many maintain that human recruiters will remain essential in the hiring process (Ore et al, 2021).

### **3. Data Privacy and Legal Issues**

The implementation of AI in recruitment faces challenges from data protection laws like Europe's General Data Protection Regulation (GDPR), which impose strict privacy requirements and complicate the deployment of AI tools (Tsiskaridze et al, 2023).

## **c. Practical Implications and Strategic Insights**

### **1. Adoption in Different Regions**

Most research on AI in recruitment has been carried out in African and Asian regions, while fewer empirical studies have been conducted in Europe, largely due to regulatory obstacles (Tsiskaridze et al, 2023).

### **2. Strategic Implementation**

Organizations should adopt AI tools strategically to support human recruiters by automating routine tasks, allowing human professionals to concentrate on complex decision-making and relationship-building activities (Upadhyay, 2018).

### **3. Balancing Human and AI Collaboration**

Organizations should cultivate a collaborative approach in which AI tools and human recruiters complement each other, combining their strengths to achieve the best possible recruitment result (Tsiskaridze et al, 2023), (Ore et al, 2021).

## **5. CONCLUSION**

The integration of AI in recruitment necessitates a Human-Centric approach to ensure fairness, transparency, and accountability. Theories of human-machine collaboration and decision-making highlight the importance of the order in which AI and humans interact in decision-making processes. Ensuring that AI systems are perceived as competent and fair is crucial for maintaining procedural justice and trust in AI-driven recruitment tools.

AI for recruitment tools provide notable advantages, such as increased efficiency, cost reduction, and better candidate matching. However, they also pose challenges, including algorithmic bias, concerns over job security, and issues related to data privacy. To fully leverage AI in recruitment, strategic implementation and continuous research are crucial to address ethical and legal issues.

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