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Research Article

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The Role of Artificial Intelligence and Big Data in the Transformation of Recruitment Processes and Financial Analysis: A Systematic Literature Review

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Abstract: *This study aims to explore the transformative role of Artificial Intelligence (AI) and Big Data in recruitment processes and financial analysis. Through a systematic literature review approach, data were collected from national journals published in the last five years. The findings show that AI has significantly improved the efficiency and objectivity of candidate selection by automated screening based on skill-matching algorithms. Meanwhile, Big Data analytics enhances financial decision-making by enabling real-time insights into company performance, profitability, and risk. The integration of these technologies not only optimizes human resources and financial management but also demands robust data governance. This research concludes that successful implementation of AI and Big Data must be holistic combining technical, managerial, perspectives to build adaptive, accurate, and sustainable organizational systems.*

Keywords*: Artificial Intelligence, Big Data, Recruitment, Financial Analysis.*

Introduction

The business world today is witnessing rapid changes, with human resources (HR) departments finding themselves facing new realities. Machines are transforming many jobs and replacing humans in many tasks. Organizations are striving to find talented candidates with multi-skilled qualifications to compete in the global market (Zurnali and Wahjono, 2022). Artificial Intelligence (AI) has become one of the technologies used to discover such candidates.

In today's digital age, improving business efficiency has become a top priority for companies across various sectors. Increasingly fierce competition and ever-changing consumer demands are driving companies to seek new ways to enhance productivity and operational effectiveness. One promising solution is the application of artificial intelligence (AI), which has developed rapidly and has had a significant impact on how businesses operate (Dinata & Nasution, 2025).

The development of Artificial Intelligence (AI) technology has brought significant changes in various fields, including human resource management, particularly in the employee recruitment process. Amid demands for efficiency and speed in workforce selection, AI offers a solution to simplify administrative tasks that were previously time-consuming and prone to human bias. Zaskia Ardhani (2023).

AI encompasses several approaches, including machine learning, which enables computers to be trained with data to predict specific outcomes, and deep learning, which uses artificial neural networks to solve more complex problems. Machine learning allows computers to learn from new data, making them

more accurate in performing tasks over time (Goodfellow et al., 2016). Deep learning, as part of machine learning, is often used in more advanced image and sound analysis. AI is also divided into two main types: weak AI and strong AI. Weak AI is designed for specific tasks, such as virtual assistants or recommendation systems, while strong AI has the ability to think and make decisions like humans in various contexts. Currently, AI used in recruitment falls under the category of weak AI, as it focuses on processing candidate data and screening (Firdaus, 2024).

Big Data is one of the main pillars of the Industry 4.0 revolution, driven by technological development and automation. Data becomes valuable once it is converted into information, and experts in the field of Big Data state that the volume of data will grow even faster in the future. IDC (Internet Data Center) estimates that by 2025, 6 billion users, or approximately 75% of the global population, will interact with online data (Arifulsyah et al., 2023).

According to a McKinsey Global Institute report (2023), the use of AI in recruitment can increase efficiency by up to 70% and reduce selection process costs by 45% (Christian Iwan et al., 2023). Human resource needs include an average employee growth rate of 15% per year, a need for workers with digital competencies, high skill matching complexity, and demands for rapid adaptation to technological changes (Sudaryanto & Hanny, 2023).

Employee recruitment and selection is a crucial process in human resource management that directly impacts organizational performance. This process aims to ensure that organizations can attract, select, and hire the most suitable individuals to fill the required positions. The effectiveness of the recruitment and selection process is vital to ensuring that hired employees can contribute optimally to the organization. Technology has transformed how companies conduct recruitment and selection processes. With technology, companies can reach a broader pool of candidates, save time, and reduce recruitment costs. Technology also enables better data collection and analysis, thereby assisting in more accurate decision-making in employee selection. Employee recruitment is a critical process for any company as it directly impacts various aspects of organizational success. Effective recruitment practices not only ensure the selection of qualified and competent individuals but also significantly contribute to employee performance. (Susanto & Hamzali, 2024).

In addition to relying on effective management, companies must conduct comprehensive financial statement analysis to understand the company's financial condition, address various financial challenges, and support strategic decision-making (Simbolon et al., 2024). This analysis helps management evaluate the efficiency of asset utilization, liquidity, profitability, and the company's capacity to meet short-term and long-term obligations (Khairani, 2023). In preparing accurate financial statements, every transaction in all departments of the company must be documented with valid transaction evidence (Banuari, 2023). The first step is to record every transaction in the general ledger, which serves as the company's basic financial record (Rahman, 2022). Next, these transactions are classified and transferred to the ledger, which groups financial data based on account categories, such as assets, liabilities, equity, income, and expenses (Nasib, 2021).

Literature Review

Artificial Intelligence (AI)

Artificial intelligence (AI) is a field of computer science that focuses on developing computer systems that can perform tasks that typically require human intelligence, such as speech recognition, facial recognition, natural language processing, and decision making. Simply put, artificial intelligence is the ability of computers to mimic human intelligence. AI aims to create machines that can think, learn, and

solve problems like humans. AI can be defined as "the ability of a system to correctly interpret external data, learn from that data, and use that learning to achieve specific goals and tasks through flexible adaptation." (Dinata & Nasution 2025).

Big Data Analysis

Big Data Analysis is a fundamental phenomenon that has the power to transform what we do and what we know. Big data analytics explains how entities can obtain, store, share, evaluate, and perform activities based on information created by electronic devices and humans as users, which will then be distributed through computers and network technology. At its core, the Big Data Analytics system itself focuses on three main elements: volume, variety, and velocity (the 3Vs), along with another V—veracity and value—which are closely tied to the characteristics of relevant data in terms of reliability and utility. In organizations where computer applications are the primary source of information for generating data, this inevitably leads to an exponential increase in data volume (Arifulsyah et al., 2023).

Recruitment

Recruitment is the process of searching for and attracting qualified candidates to fill vacant positions within an organization. Recruitment is part of human resource management that aims to obtain the best candidates who meet the company's needs. This process consists of several main stages: identifying needs, searching for candidates, selection, interviews, and job offers (Firdaus, 2024).

Recruitment also involves evaluating internal candidates who already work for the company, known as internal recruitment. This strategy is often used to increase employee loyalty and provide broader career opportunities for existing employees, so that companies can retain quality employees (DeVaro, 2020).

Financial Analysis

Financial statement analysis is a method or technique for conducting a comprehensive evaluation of a company's financial statements. This analysis is crucial for assessing financial stability and identifying the profits or losses earned by the company (Nazah et al., 2024).

Financial statement analysis is an analysis of financial statements that consists of examining or studying relationships and trends to determine the financial position and operating results as well as the development of the company (Hasanah et al., 2023).

Financial statement analysis is an integral part of business analysis. The results of financial analysis are used by company management to make strategic decisions. For example, the decision to invest in a company. The purpose of financial statement analysis is to obtain information and input about past business performance and future prospects of a company's business (Indrianto & Sutikno, 2024).

Method

The method used in this study is a literature review taken from several national journals and expert articles accessed online. According to Sugiyono (2019), literature study research is theoretical, reference, and scientific literature research related to culture, values, and norms that develop in the social situation being studied. Literature study can also be defined as research that collects data from research reports, scientific books, articles, and relevant journals. The search for literature sources in this article was conducted through the Google Scholar database. The literature sources used in the preparation involved library sources consisting of 7 national journals. The selection of literature source articles was done by

reviewing the relevance of the title, abstract, and results discussing AI and Big Data in the recruitment process and digital finance.

Results and Discussion

The literature review reveals that the application of Artificial Intelligence (AI) in recruitment processes has significantly enhanced the efficiency and effectiveness of candidate selection. Machine learning algorithms enable automated screening of applicant data based on skill matching, experience, and other relevant characteristics. This approach addresses the modern recruitment challenges that demand speed and objectivity in decision-making (Firdaus, 2024). According to McKinsey Global Institute, AI implementation can improve recruitment efficiency by up to 70% and reduce selection costs by 45% (Christian Iwan et al., 2023).

However, despite its efficiency, AI in recruitment also presents ethical challenges, particularly related to algorithmic bias. AI systems trained on biased historical data may reproduce and even amplify discriminatory practices. This situation calls for ethical oversight and algorithmic audits to ensure fairness and accountability in the selection process (Mujtaba & Mahapatra, 2024). Companies must implement transparent and equitable frameworks to prevent AI from undermining the diversity and inclusivity of recruitment outcomes.

On the other hand, Big Data in financial analysis provides substantial advantages for comprehensively understanding a company's financial condition. By utilizing large and diverse datasets, management can identify financial trends, assess asset efficiency, and predict financial risks more accurately (Simbolon et al., 2024). Such analysis forms a critical foundation for strategic decision-making related to investments, financing, and operational policy development.

Furthermore, the integration of AI and Big Data into financial reporting accelerates data processing, enhances reporting accuracy, and enables early detection of transactional anomalies. Nonetheless, the success of these technologies depends heavily on the integrity and validity of financial data, which requires systematic documentation across departments (Banuari, 2023; Khairani, 2023). A consistent and well-organized financial recording system is essential to support meaningful and reliable financial analysis.

Conclusion

Based on the literature review, it can be concluded that Artificial Intelligence and Big Data have a transformative impact on recruitment and financial analysis processes. AI contributes to faster and more objective employee selection, while Big Data strengthens the company's analytical capacity to monitor financial conditions in real-time. However, their implementation must be accompanied by proper data governance and strict ethical supervision to mitigate algorithmic bias, systemic errors, and potential privacy violations. Thus, the integration of these technologies must be holistic, combining technical, ethical, and managerial perspectives to develop an adaptive and sustainable organizational system.

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