(REVIEW ARTICLE)

Systematic literature review: The implementation of artificial intelligence (IA) sophistication in facilitating the employee recruitment process

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Abstract

This study aims to analyze the application of sophisticated artificial intelligence (AI) in facilitating the employee recruitment process. The research method used is *Systematic Literature Review* (SLR). Researchers obtained research data from *Google Scholar* and other research journal article providers over a period of 6 years, namely 2019-2024. 73 journals were obtained after that the data was reduced with several criteria, namely inclusion and exclusion criteria, 10 journals were obtained to be reviewed. The results of this study state that sophisticated AI simplifies the employee recruitment process from the beginning of the recruitment process because it can be more efficient in terms of cost, time, and energy and can reduce the subjectivity of human assessment. However, the final recruitment process still requires the intervention of Human Resources. This is because AI is less able to adapt to culture and language which can cause bias in decision making. AI *software* that is often used by companies to facilitate the employee recruitment process is *Job Agrigator Software* and *Candidate Assessmant Software*.

Keywords: Artificial Intelligence; Recruitment; Systematic Literature Review; Job Agrigator Software; Candidate Assessmant Software

1. Introduction

Along with the continuous development of technology, especially the emergence of artificial intelligence (AI). This has brought about quite significant changes in various aspects, especially human resource management such as the employee recruitment process. Increasingly competitive business competition requires a company to increase efficiency and effectiveness in finding prospective employees with the right steps. According to Bijih and Sposato (2022), the implementation of artificial intelligence (AI) provides various benefits and opportunities, such as time efficiency in implementing a recruitment process, especially for analyzing large-scale data, which can later shorten a decision-making process.

However, although artificial intelligence (AI) has quite a lot of potential, there are also risks that need to be considered further. One of the problems that arises is algorithmic bias, decisions made by artificial intelligence (AI) can be influenced by the quality and representativeness of the training data used. Nawaz (2020), bias in artificial intelligence (AI) applications needs to be addressed immediately, especially in the context of facial recognition which can cause discrimination against certain groups in a recruitment process. This shows that there needs to be a policy and stricter supervision of the use of artificial intelligence (AI) in a recruitment process.

Along with advances in technology, chatbot applications have become a tool that is commonly used in a recruitment process. According to Nawaz and Gomes (2019), the role of humans in conducting interviews and collecting information

from prospective employees can be replaced by chatbots. Although this can increase efficiency, companies must consider more complex human relationships or interactions that can be missed or lost in such an automation process.

Furthermore, research conducted by Yuan et al. (2022) shows that the use of artificial intelligence (AI) in a recruitment process is influenced by several contextual factors, such as organizational culture, management support, and technological sophistication readiness. This shows that the success of implementing artificial intelligence (AI) does not only depend on the sophistication of the technology itself, but also on an organization that can integrate with existing systems and processes. In addition, the implementation of artificial intelligence (AI) in a recruitment process also needs to consider its impact on the experience of prospective employees and the company's reputation (Oswal et al., 2020).

Considering the various opportunities and challenges above, this study aims to conduct a systematic analysis of the application of artificial intelligence (AI) in facilitating the employee recruitment process. Through *the Systematic Literature Review* (SLR), this study seeks to review in more depth the findings or previous studies that already exist in order to obtain the most appropriate understanding of how the sophistication of artificial intelligence (AI) is applied in an employee recruitment process. It is hoped that this study can provide an understanding for a company and company stakeholders in optimizing the use of artificial intelligence (AI) effectively and efficiently in the employee recruitment process.

2. Literature review

2.1. Artificial Intelligence (AI)

According to Nawaz (2020), Artificial Intelligence (AI) is data and algorithms on a large scale, which provide a flow to process talented employee information effectively and efficiently which will provide much cheaper costs when compared to the previous period. Meanwhile, according to Geetha R. and Bhanu Sree Reddy D. (2018), AI refers to the ability of a computer system to perform tasks that generally require human intelligence, including decision making, learning, and adapting to new conditions. In the scope of recruitment, artificial intelligence (AI) can be used to analyze data or information from applicants which can later increase the efficiency of the employee recruitment process.

2.2. Employee Recruitment

According to Gary Dessler (2016) recruitment is a process of obtaining and selecting prospective employees, the purpose of which is to fill vacant positions with the best prospective employees. Meanwhile, according to Geetha R. and Bhanu Sree Reddy D. (2018), recruitment is a systematic process that includes the recruitment and selection of prospective employees to fill a particular job position. This process involves identifying workforce needs, searching for candidates, and assessing their abilities. In this scope, the use of technology such as artificial intelligence (AI) can improve the accuracy and speed of the recruitment process.

2.3. Artificial Intelligence (AI) and Employee Recruitment

Nishad Nawaz (2020) stated that artificial intelligence (AI) technology, including facial recognition applications, can be used to improve the recruitment process by accelerating the identification of suitable candidates. This shows that technology can help companies in recruiting applicants more efficiently. Artificial intelligence (AI) has been applied in various steps in the employee recruitment process. For example, Nawaz and Anjali Mary Gomes (2019) explained that AI chatbots function as virtual recruiters that can interact with prospective employees, provide information, and answer questions in *real-time* which not only improves the prospective employee experience but can also save time for HRM.

Yuan Pan et al. (2022) explained that the use of artificial intelligence (AI) in recruitment is influenced by various contextual factors, such as organizational culture and technological readiness. This shows that to achieve optimal results in the recruitment process, organizations need to consider the context in which they operate. Oreh Olajide and Martin Sposato (2022), stated that although artificial intelligence (AI) offers various opportunities to increase efficiency and objectivity in recruitment, there are also several risks that need to be considered, such as algorithmic bias and privacy issues. This requires proper data selection and strict supervision to ensure that artificial intelligence (AI) is used ethically.

Giulia Baratelli and Elanor Colleoni (2022) studied the impact of artificial intelligence (AI)-based employee recruitment on company branding. They found that the application of AI can improve the company's image in the eyes of prospective employees, and can also attract more qualified applicants. This study confirms that artificial intelligence (AI) not only functions in the selection process but also as a strategic tool to increase the attractiveness of the company. M. Tamzid (2021) reviews the future of recruitment whether it will be replaced by artificial intelligence (AI). Although AI offers

efficiency, human interaction remains important in processes that require emotional and interpersonal assessments. This suggests that the future of recruitment may involve a collaboration between technology and human skills.

3. Methodology

The methodology used in this study is the *Systematic Literature Review* (SLR) method. The steps used in this method are identifying, interpreting, and evaluating all available research that is relevant to the formulation of the problem or research topic being studied (Calderon and Ruiz 2015). The purpose of this study is to find an alternative that can make it easier to overcome the problems faced and identify differences in perspectives related to the sophistication of artificial intelligence (AI) in the employee recruitment process and express theories that are relevant to the problems in this study. The stages in this study are as follows:

3.1. Formulating the Problem

The first stage is the researcher formulates the problem to be discussed in more depth. These questions are made based on the needs of the research topic to be selected, namely as follows:

- A journal that discusses the sophistication of artificial intelligence (AI) in facilitating the employee recruitment process.
- Artificial intelligence (AI) in facilitating the employee recruitment process in previous research.
- Types of artificial intelligence (AI) in facilitating the employee recruitment process in previous research.
- What factors support the implementation of sophisticated artificial intelligence (AI) in facilitating the employee recruitment process?
- What research method is most often used in artificial intelligence (AI) research to facilitate the employee recruitment process?

3.2. Looking for Literature Review

The second stage is to search for relevant research journal articles based on the predetermined research topic. The research *literature review search* was conducted in September 2024. The data used in this study are secondary data obtained from previous studies. This secondary data source can be in the form of articles or journals published on Google Scholar and other research journal article providers in a period of 6 years, namely 2019 - 2024. The initial identification results obtained 73 research articles or journals.

3.3. Conducting Screening and Selection of Previous Research that is Considered Appropriate

The third stage is to conduct filtering and selection. After conducting filtering and selection, there are 10 research journal articles that meet the criteria and 63 research journal articles that do not meet the criteria.

3.4. Analyzing Literature Review Results

The fourth stage is the stage where researchers conduct an analysis to group research journal articles according to the criteria determined above.

3.5. Conclusion

The fifth stage is to conclude the results of the search for research journal articles that have been summarized in the analysis stage. Researchers make a conclusion by making a brief statement regarding the results of the descriptive analysis obtained from logical relationships according to the facts and containing answers to the statements submitted in the problem formulation section.

4. Discussion

Based on the research methodology that has been carried out, a summary of the results is obtained as follows:

The results of previous studies show that the sophistication of artificial intelligence (AI) in facilitating the employee recruitment process in obtaining potential employees and obtaining the talents needed by the company for the sustainability of the company. This is because it creates efficiency in time, cost, and energy and can reduce the subjectivity of human assessment in an employee recruitment process. In addition, artificial intelligence (AI) is very good for use in the early stages of the employee recruitment process, but in the final stages of the employee selection process, a human recruiter is still needed. This is because artificial intelligence (AI) is difficult to adapt to language and

culture which causes bias in decision making. Tools that are often used by companies are *Job Agrigator Software*, *Candidate Assessmant Software*.

Table 1 The Relationship of Artificial Intelligence and The Recruitment Process

No.	Researcher	Research Title	Research methods	Research result
1	(Yuan Pan et al., 2022).	The Adoption of Artificial Intel-ligence in Emplo-yee Recruitment: The Influence of Contextual Fac-tors.	This study introduces the technology, organization, and environment (TOE) model from information systems research and integrates it with transaction cost theory to better understand the faci-litators and constraints of AI adoption behavior during employee recruitment.	The results of this study indicate that the complexity perceived by firms towards AI inhibits AI adoption, while technological competence and regulatory support encourage AI adoption. The relative advantage of AI technology, firm size, and industry do not have a significant impact on AI adoption. The findings also indicate a moderating effect of transaction costs on the strength of the influence of technological complexity and organizational technological competence.
2	(R.Vedapradha et al., 2109) .	Artificial Intel-ligence : A Tech-nological Proto-type in Recruit-ment.	The method used is Multiple Linear Regression to predict employee performance and oneway ANOVA is used to compare artificial intelligence based recruitment with performance indicator variables namely reliability, productivity, Automation, Gamification & Training using SPSS.	There is a greater relationship between recruitment and per-formance when artificial intelligence (AI) and productivity are maxi-mized. However, the impact of implementing gamification for recruit-ment is not significant. Productivity, Training, Automation & Reliability are significant predictors of employee performance. Chatbots drive better proactive strategic decision ma-king by recruiters.
3	(Nishad Nawaz, 2020).	Artificial Intel-ligence Appli-cations For facial Recognition in Recruitment Pro-cess.	This research incorporates a systematic review process to identify relevant academic sources.	Facial recognition features are essential in the recruitment process to learn more about the applicant. This research is very specific to the field of facial recognition in the re-cruitment process. The importance of auto-mating the employee recruitment system when compared to traditional employee recruitment methods.
4	(Olajide Ore et al., 2022).	Opportunities and Risks of Artificial Intelligence in Recruitment and Selection.	The research method used is a qualitative approach in this exploratory study. Indepth semi-structured face-to-face in-terviews were con-ducted with ten professional recruiters working in multinational com-panies.	AI facilitates the effective performance of routine tasks through automation processes. However, the application of AI technology in employee recruitment is also fraught with risks that cause fear and distrust among recruiters. Effective application of AI can improve employee recruitment strategies.
5	(Nishad Nawaz et al., 2019).	Artificial Intel-ligence Chatbots are New Recru-iters.	This research is entirely based on literature review. The collected literature provides a basic understanding of artificial intel-ligence chatbots and their flow in the recruitment process.	Artificial Intelligence Chatbot is a very productive tool in the recruitment process and will help in preparing recruitment strategies for the Industry. Moreover, Chatbot fo-cuses more on solving complex problems in the recruitment process.

6	(Giulia Baratelli et al., 2022)	Does Artificial Intelligence (AI) Enabled Recru-itment Improve Employer Bran-ding?	To investigate this issue, a survey was conducted on a random sample of individuals consisting of 50% female and 50% male. Structural equation modeling (SEM) was used to test the survey results.	The results of the study show a positive relationship between EB and AI and more specifically that AI-enabled tools are viewed positively by potential candidates. Therefore, according to this study, AI has a significant relationship with Employer branding and therefore, AI contributes to increasing talent attraction.
7	(Nidhi Oswal et al., 2020)	Recruitment in The Era of Industry 4.0: Use of Artificial Intelligence in Recruitment and Its Impact.	This research is based on a literature review analysis of various theoretical frame-works, conceptual papers, journals, and websites.	AI has the ability to improve the quality of the recruitment process by matching the most suitable candidates to the job specifications. AI can also improve the overall quality of the recruitment process by eliminating the long and repetitive tasks performed by HR during the employee recruit-ment process.
8	Swatee B et al., 2019)	Intelligent Soft-ware Tools for Recruiting.	Artificial intelligence (AI) theory has been applied to the field of HRM to develop new theories with tools that can improve the efficiency of the employee recruitment process.	Artificial intelligence (AI) that is often used by companies is *Job Agrigator Software*, *Candidate Assessmant Software* and ATS *(Applicant Tracking Software)*. AI helps HR to identify and reach applicant candidates quickly and their screening is faster, thus reducing employee recruitment time which can benefit both the organization and potential candidates. AI-powered tools use social media sites and links extensively and efficiently to identify candidates.
9	(Christian Iwan et al., 2023)	Analysis of the Use of Artificial Intelligence in Assisting the Company's Em-ployee Recruit-ment Process.	The research methodology used is qualitative research with literature studies, to obtain reliable information and produce substantial and quality articles.	The research results show that artificial intelligence (AI) has the potential to provide better quality, faster, and more cost-effective applicant acquisition facilities, and can reduce the subjectivity of hu-man assessments.
10	(Wahyu Eko et al., 2024)	The Influence of Artificial Intel-ligence (AI) on Employee Recru-itment.	The research methodology used is a *mixed-method ap-proach*, combining a quantitative survey of 200 companies and in-depth inter-views with 20 HR professionals, as well as case studies of 5 selected com-panies.	The results of this study indicate that the application of artificial intelligence (AI) in the recruitment process has a significant positive impact, especially in increasing time efficiency and candidate quality. In addition, artificial intelligence (AI) also contributes to reducing bias in the selection process and increasing recruitment cost efficiency.

5. Conclusion

Based on the description and explanation above, it can be concluded that the sophistication of artificial intelligence (AI) simplifies the employee recruitment process which makes it easier to find potential applicant candidates. This is because it creates efficiency of time, cost, and energy and can reduce the subjectivity of human assessment in an employee recruitment process. In addition, artificial intelligence (AI) is very good to use in the early stages of the employee recruitment process, but in the final stages of the employee selection process still requires a human recruiter.

This is because AI has difficulty adapting to language and culture which will result in bias in decision making. Artificial intelligence (AI) that is often used by companies is *Job Agrigator Software* , *Candidate Assessmant Software* .

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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