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Artificial Intelligence in Recruitment Processes Benefits and Bias in Resume Screening in IT Sector in Bangalore

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ABSTRACT

This research paper investigates the impact of Artificial Intelligence (AI) on contemporary recruitment practices, focusing on a survey conducted in Bangalore, which is recognized as India's technology hub. The study analyzes how AI-powered tools are revolutionizing the process of resume screening by enhancing efficiency, minimizing human labor, and facilitating quicker candidate shortlisting. Nevertheless, in addition to these advantages, issues related to algorithmic bias, transparency deficits, and fairness in candidate assessment have surfaced. By employing a structured questionnaire distributed among HR professionals, recruiters, and job seekers in Bangalore, the research gathers a variety of viewpoints regarding the perceived benefits and drawbacks of AI in recruitment.

KEY WORDS: Human Resource Management, Artificial Intelligence, Recruitment, Selection, Resume screening

INTRODUCTION

In the changing environment of contemporary recruitment, Artificial Intelligence (AI) has surfaced as a revolutionary instrument for optimizing hiring procedures, particularly in the early phases of candidate evaluation. The incorporation of AI in resume assessment has enabled organizations to efficiently handle large volumes of applications, shorten the time required to hire, and improve the accuracy of decision-making. As enterprises in urban technology centres such as Bangalore increasingly embrace AI-enhanced recruitment methods, it is essential to assess both the advantages and possible biases linked to these technologies.

RESEARCH QUESTIONS

- Are you aware that Artificial Intelligence is being used in recruitment processes?
- Are you cognizant of the fact that Artificial Intelligence is being utilized in recruitment procedures?
- Have you ever suspected that your application was rejected due to algorithmic screening?
- Have you ever gone through an AI-based screening or interview process?
- Do you believe an AI tool has ever unfairly rejected your job application?
- Would you feel more confident if a human reviewed your resume rather than AI?

REVIEW OF LITERATURE

- **Kyra Wilson, oct (2024): "Gender, Race, and Intersectional Bias in Resume Screening via Language Model Retrieval":**Resume screening has been transformed by artificial intelligence (AI) hiring tools, and large language models (LLMs) have the potential to follow suit. It is unclear, though, if LLMs can be applied in this situation without disadvantageously affecting groups based on their protected characteristics, given the biases that are ingrained in them. In this study, we use a document retrieval framework that mimics the hiring process to explore the potential of LLMs in a resume screening context.
- **Aylin caliskan, July (2024): "Gender, Race, and Intersectional Bias in Resume Screening via Language Model Retrieval":** Resume screening has been transformed by artificial intelligence (AI) hiring tools, and large language models (LLMs) have the potential to follow suit. It is unclear, though, if LLMs can be applied in this situation without disadvantageously affecting groups based on their protected characteristics,

given the biases that are ingrained in them. In this study, we use a document retrieval framework that mimics the hiring process to explore the potential of LLMs in a resume screening context.

- **Abhinash Singh, (2025) "AI-Based Resume Screening: A Machine Learning Approach to Modern Recruitment":** The need for effective, objective, and astute hiring solutions is driving a rapid evolution in the recruitment landscape. Conventional resume screening techniques are laborious and prone to human error, which frequently results in less-than-ideal hiring choices. This study uses sophisticated Natural Language Processing (NLP) techniques to automate resume screening through machine learning.
- **Niranjana Murthy,may (2025) "Developing an Intelligent Resume Screening Tool With AI-Driven Analysis and Recommendation Features":**The manual review process used for resume screening now results in errors and delays when assessing a high volume of resumes. Inefficiencies and possible biases result from a lack of automation and data extraction. Time constraints and oversight make it difficult for recruiters to find qualified candidates.
- **Niranjan, march(2025): " AI-Powered Resume Parsing for Efficient Recruitment":**Human resource management is one of the many industries that have seen significant change as a result of the integration of Artificial Intelligence (AI) into Business Process Management Systems (BPMS). The AI-driven Resume Parser is a noteworthy innovation in this field that improves the hiring process by automating candidate selection and resume evaluation.
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- **Dr.sujit das, april (2025): " AI Resume Analyzer: Smart Resume Evaluation and Enhancement":**An AI-powered resume analyzer is presented in this paper with the goal of improving and expediting the hiring process. The system efficiently processes and evaluates resumes using machine learning algorithms and Natural Language Processing (NLP) techniques. The analyzer seeks to help recruiters and job seekers maximize the resume screening process by extracting important information, determining an ATS compatibility score, detecting grammar mistakes, and offering suggestions for improvement
- **Tarun B, march(2025): " Job Screen AI – Automated Resume Screening system":**In order to improve hiring efficiency, this paper proposes an AI-model-based automated resume screening system. By automating the process of comparing resumes to job descriptions, the system improves hiring accuracy and minimizes manual labor. The system helps employers choose the best applicants by using AI for analysis and giving applicants timely feedback
- **Rohan chhatre, may(2025): "Mitigating Bias in AI-Driven Recruitment: Ethical Challenges and Governance Solutions":** By automating processes like candidate evaluation, resume screening, and hiring recommendations, artificial intelligence (AI) is revolutionizing human resources (HR) and recruitment. However, ethical questions have been raised by the use of AI in these fields, especially in relation to bias. With an emphasis on real-world case studies where biased algorithms have affected hiring outcomes, diversity, and inclusion, this paper explores bias in AI-driven recruitment tools
- **Devanshish pandey, feb (2025): "AI-Powered Recruitment: Transforming Talent Acquisition in the Digital Age":**Traditional hiring practices have changed as a result of artificial intelligence (AI). It has greatly enhanced the candidates' experiences, accuracy, and efficiency throughout the process. By expediting the decision-making process, companies are also quickly implementing AI-driven solutions such as chatbots, predictive analytics, resume screening algorithms, and video interviews for evaluations. However, there is much debate regarding the fairness of AI and the elimination of bias in hiring decisions.
- **Ankit dubey, april (2025): "INTELLIPREP: AI Powered Interview Preparation and Resume Evaluator":**Due to a lack of organized resources and individualized feedback, students in today's fiercely competitive job market struggle greatly with resume preparation and interview readiness. Conventional approaches are frequently ineffective, time-consuming, and fall short of contemporary hiring standards. Additionally, interview scheduling, evaluation consistency, and resume screening present challenges for recruiters. IntelliPrep provides an AI-powered solution that automates crucial steps in the interview preparation process in order to address these issues.
- **Felix chad, feb (2025): "Ethical Considerations and Bias in AI- Driven Employee Screening":**With the promise of efficiency and objectivity, artificial intelligence (AI) is being incorporated into hiring and employee screening procedures more and more. But there are serious ethical issues with using AI in these procedures, especially when it comes to bias, justice, and transparency. Biases may be unintentionally reinforced by AI models trained on past hiring data, which could result in prejudice against underrepresented groups.
- **Faizan ali jafari, may (2025): "Automated Resume Screening System Using NLP and Machine Learning":**The inefficiencies of manual resume screening, a procedure that is frequently slow, biased, and prone to errors, plague modern recruitment. We introduce an artificial intelligence (AI) system that automates resume extraction, analysis, and ranking by combining machine learning (ML) and natural language processing (NLP) with a MERN stack platform.

- **Narmatha jaya sri M, april (2025): "Advancing Resume Screening with Transformer-Based Deep Learning and Graph Neural Network":**Conventional resume screening methods, which rely on keyword matching (e.g., Jaccard/Cosine similarity), have trouble with contextual evaluation, multilingual content, and semantic understanding, which results in hiring procedures that are biased and ineffective. In order to overcome these constraints, this paper presents an AI-driven resume analysis system.
- **Matthew Benjamin, feb(2025): "Addressing Bias in AI-Driven Employee Screening and Drug Testing Models":**Resolving Bias in AI-Powered Drug Testing and Employee Screening Models Artificial intelligence (AI) has improved efficiency and simplified decision-making in drug testing and employee screening procedures. But because of biased training data, flawed algorithms, and structural inequalities in society, these AI-driven models frequently display bias. Unfair hiring practices, disproportionate scrutiny of particular demographics, and ethical and legal issues can all arise from bias in these systems.

RESEARCH GAP

CITATION (AUTHOR, YEAR)	DESIGN OF RESEARCH	OBJECTIVES	FINDINGS	RESEARCH GAP
Aylin Caliskan (2024)	Simulation of AI screening	Analysis bias Analysis bias using document retrieval via LLMs	Reproduced discriminatory patterns	Same study of Kyra Wilson - again ,lacks solution framework
Kyra Wilson (2024)	Document retrieval framework	Evaluate LLM bias across race/gender	Bias detected across protected characteristics	Does not propose de-biasing solutions
Abhinash Singh (2025)	Experimental (ML &NLP model)	Automate resume screening with NLP&ML	Improved efficiency,reduced human error	Did not assess bias,lacks real-world recruiter feedback
Niranjanamurthy (2025)	Tool development & prototype testing	Build AI-based analysis & recommendation engine	Reduced delays in high-volume screening	No attention to fairness or ethical concerns
Niranjan (2025)	Case-based design using BPMS-AI integration	Streamline candidate selection	Effective parsing, less recruiter workload	No user-level evaluation of system impact
Nirajan (2025)	Technical prototype	Resume evaluation using AI parser	Reduced recruiter workload, enhanced parsing	No external validation of accuracy or fairness
Dr. Sujit Das (2025)	Analytical/NLP-enhanced ATS design	Improve resume screening, detect grammar & ATS fit	Detected weak resumes, gave suggestions	No user feedback or fairness analysis
Tarun B (2025)	Model-based simulation	Auto-match resumes with job descriptions	Accurate shortlisting, quick decisions	Candidate side experience not addressed
Rohan Chhatre (2025)	Case study + ethical analysis	Address bias in AI hiring systems	Bias harms inclusion, exposed algorithmic injustice	No technical method for bias correction suggested
Devanshish Pandey (2025)	Survey + system overview	Examine AI in digital hiring	Improved decision-making, time-saving	Bias/fairness addressed superficially
Ankit Dubey (2025)	Solution-focused (resume + interview prep tool)	Improve student readiness & recruiter consistency	Helped students, simplified evaluations	Focuses on training/prep, not bias/fairness in tools

Felix Chad (2025)	Ethical review with literature	Explore ethics and bias in AI screening	AI reinforces past bias if not monitored	Calls for transparency but lacks metrics for evaluation
Faizan Ali Jafari (2025)	MERN-based AI system prototype	Develop screening tool with NLP/ML	Fast processing, ranked candidates effectively	Limited evaluation of semantic/contextual accuracy
Narmatha Jaya Sri M (2025)	Deep learning model (GNN + Transformers)	Address keyword-based screening limitations	Improved semantic analysis and multilingual support	High tech model, but lacks bias or ethical validation
Matthew Benjamin (2025)	Legal/ethical review	Investigate AI bias in hiring & testing	AI bias worsens social inequality	Emphasized fairness, no tool tested

Table 1:Showing the research gap

Conceptual model

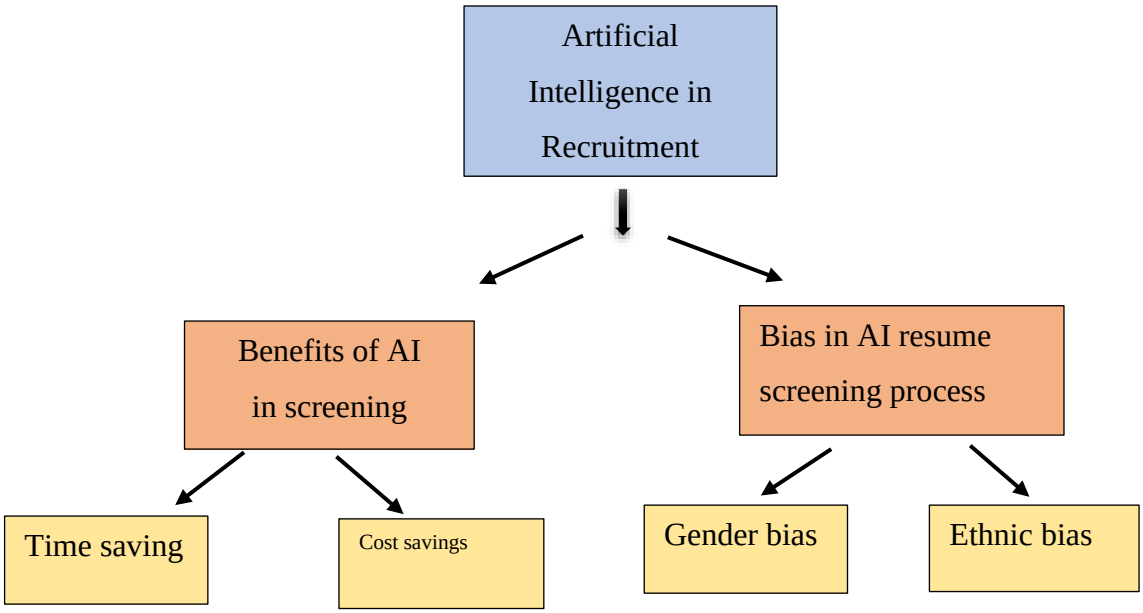

Fig.1 Showing Conceptual Model

PROBLEM STATEMENT

Despite attempts to formulate clear and impartial questions, errors and biases from respondents may still influence the quality of the findings.

The validity of the findings could be affected by the precision and thoroughness of the data employed to assess the impact of AI on the recruitment and selection process. The study's utility may be constrained by incomplete or erroneous data, potentially leading to inaccurate outcomes. Consequently, the limited sample size and low response rate may fail to yield reliable and precise results.

The majority of responses collected through the Google forms originated from individuals employed in the IT sector. Therefore, the findings predominantly reflect the IT industry. For other organizational sectors, the results may be less accurate or reliable, complicating the process of generalization.

RESEARCH METHODOLOGY

- **Research Design**

This study adopts a descriptive and exploratory research design. The aim is to understand how Artificial Intelligence (AI) is applied in recruitment processes, especially in resume screening, and to identify the benefits and biases perceived by HR professionals, recruiters, and job applicants in Bangalore.

- **Data Collection Method**

The data for this research was obtained through a structured questionnaire survey aimed at individuals engaged in recruitment activities in Bangalore, encompassing HR professionals, hiring managers, and job applicants.

Primary data: This refers to data that can be measured and is gathered using organized instruments such as surveys or questionnaires.

Secondary data: Secondary data was obtained from various credible sources including:

- Academic journals
- Articles from business maganizes
- Previous research papers
- Company websites and HR blogs
- **Sampling Method**

A purposive sampling technique is used to target HR professionals, recruiters, and job seekers in Bangalore who have direct experience with AI-based recruitment tools. HR managers, recruitment executives, and job applicants in Bangalore

- **Sample size**

Approximately 48 survey respondents.

VARIABLE DESCRIPTION

VARIABLE TYPE	VARIABLE NAME	DESCRIPTIO
Independent variable	AI Adoption Level	Measures the extent to which AI is used in recruitment processes (e.g., resume screening, chatbots, shortlisting)
dependent variable	Perceived Benefits of AI	Evaluates the advantages of using AI (e.g., time-saving, accuracy, objectivity, cost reduction).
Control variable	Years of Experience	Number of years of professional experience, which may affect perception of AI.
Demographic variable	Role of Respondent	Classifies participants (e.g., HR professional, recruiter, job seeker).

Table 2: Showing the variable description

ANALYSIS AND DISCUSSIONS

Demographic Analysis- Age

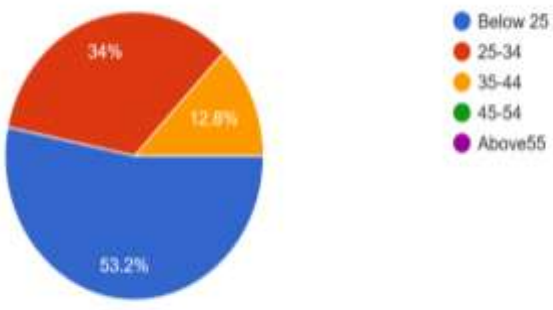

Fig.2 Showing age wise distribution

Interpretation

A majority of the respondents (53.2%) belong to the "Below 25" age group, indicating a younger demographic. The second-largest group is the 25–34 range (34%), showing active early-career professionals. There are no respondents above the age of 44, highlighting limited input from older age groups in this survey.

Demographic Analysis- Gender

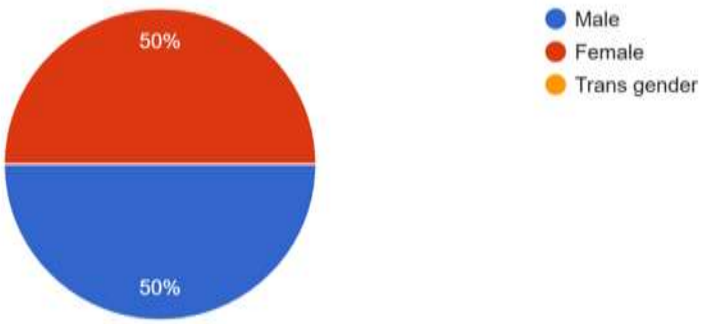

Fig.3 Showing gender wise distribution

Interpretation

The distribution of gender among the respondents is evenly divided between males and females, with each group accounting for 50% of the total. No respondents identified as transgender. This equitable gender representation provides a balanced perspective from both male and female viewpoints in the analysis; however, it does not include insights from transgender individuals.

The Artificial Intelligence is used in recruitment processes

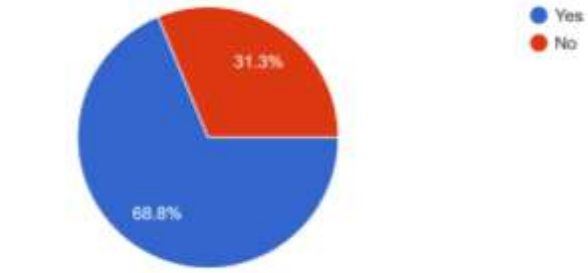

Fig .4 Showing an the Artificial intelligence is used in recruitment processess

Interpretation

A considerable proportion (68.8%) of those surveyed recognize that artificial intelligence is utilized in recruitment processes. Almost one-third (31.3%) of the respondents remain uninformed about the role of AI in hiring. This suggests that although awareness levels are fairly elevated, there remains a necessity for additional education and communication regarding the applications of AI in recruitment, particularly as AI becomes more deeply embedded in human resources systems.

The application was rejected due to alogorthmic screening

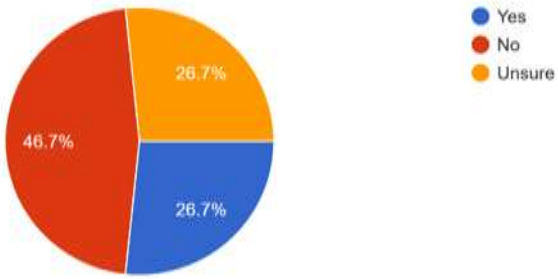

Fig.5 The application was rejected due to alogorthmic screening

Interpretation

Almost 50% of the participants (46.7%) do not think that their application was turned down as a result of algorithmic screening. Nevertheless, 26.7% express concerns about potential algorithmic bias, while an additional 26.7% remain uncertain, reflecting a degree of apprehension and ambiguity surrounding the screening procedure.

The AI-based screening or interview process

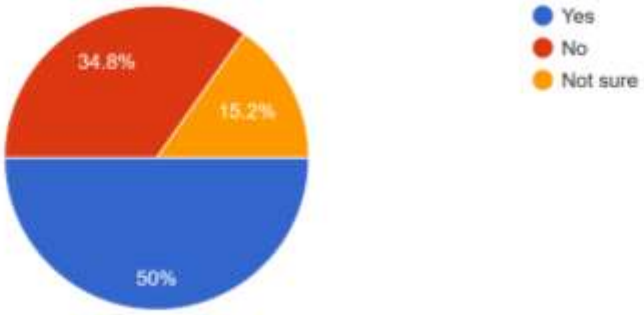

Fig.6 Showing the AI-based screening or interview process

Interpretation

Fifty percent of the participants (50%) reported having undergone an AI-driven screening or interview process, suggesting a notable integration of AI in the recruitment sector. Conversely, 34.8% have not experienced this, and 15.2% remain uncertain, highlighting the diverse levels of exposure and understanding among job applicants.

AI tool has unfairly rejected the job application

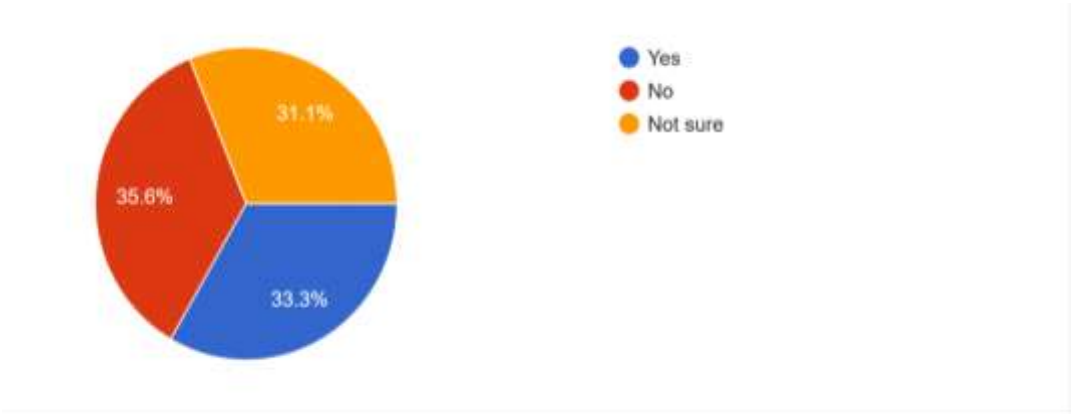

Fig.7 Showing AI tool has unfairly rejected the job application

Interpretation

About one-third (33.3%) of those surveyed feel that an AI tool has unjustly dismissed their job application, whereas 35.6% do not hold this view. Importantly, 31.1% remain uncertain, suggesting a lack of clarity or transparency in AI-based recruitment processes.

More confident if a human reviewed the resume rather than AI

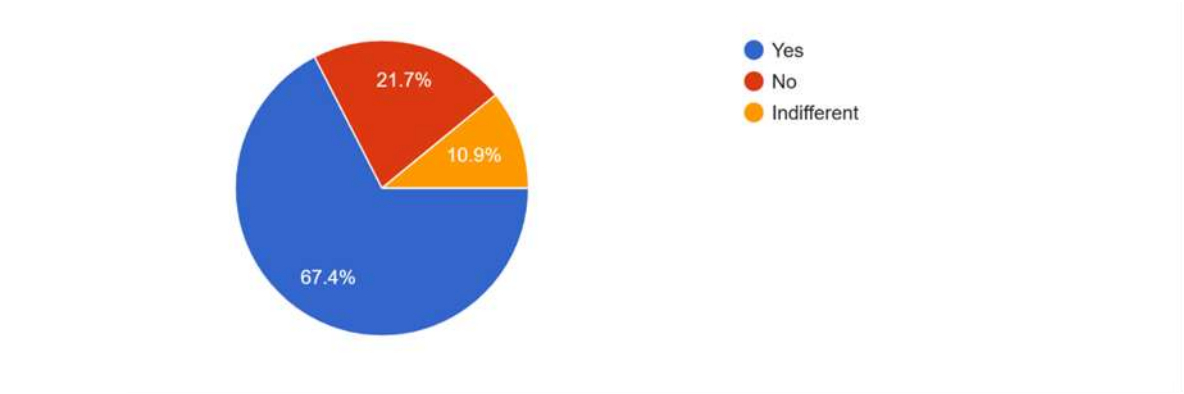

Fig.8 Showing More confident if a human reviewed the resume rather than AI

Interpretation

67.4% of participants express greater confidence when a human evaluates their resume compared to AI. This suggests a significant inclination towards human assessment rather than automated systems in the hiring process.

CONCLUSION, LIMITATIONS, IMPLICATIONS, AND FUTURE RECOMMENDATIONS

CONCLUSION

This research investigated the impact of Artificial Intelligence (AI) on recruitment, with a specific emphasis on the resume screening processes in the Bangalore job market. The results indicate that AI-powered tools provide considerable advantages regarding efficiency, speed, and impartiality when evaluating extensive numbers of resumes. Recruiters noted enhancements in decision-making and time-saving benefits, whereas job applicants recognized quicker communication and feedback.

LIMITATIONS

This research offers significant insights into the perceived advantages and biases associated with AI in recruitment processes in Bangalore; however, it has its limitations. The sample size was relatively small, which may not adequately reflect the diverse workforce or recruitment practices across various industries in the area. Furthermore, the responses are derived from self-reported perceptions, potentially introducing personal bias or a lack of technical comprehension regarding AI systems. The study predominantly concentrates on resume screening, omitting other AI applications in recruitment such as interview analysis or skill assessments.

IMPLICATIONS

The results of this research underscore significant implications for both recruiters and job applicants within the dynamic job market of Bangalore. The pronounced inclination towards human participation in the evaluation of resumes indicates a prevailing scepticism regarding the fairness and transparency of AI, thereby highlighting the necessity for more ethical and comprehensible AI solutions in recruitment. Organizations are required to strike a balance between the efficiency offered by AI and the critical role of human oversight to alleviate potential biases and foster inclusive hiring practices. Additionally, it is essential for policymakers and HR professionals to contemplate the establishment of explicit guidelines for the responsible deployment of AI, thereby promoting fairness and enhancing candidates' trust in technology-driven hiring methodologies

FUTURE RECOMMENDATIONS

To improve the efficacy and equity of AI in the process of resume evaluation, future initiatives should prioritize the creation of transparent and explainable AI algorithms that reduce bias and encourage equal opportunity. Ongoing training and oversight of AI systems are crucial to guarantee ethical decision-making that aligns with the diversity objectives of organizations. Furthermore, it is advisable for companies to implement a hybrid approach that merges the efficiency of AI with human insight, particularly during the initial stages of screening. Additionally, extensive studies should be carried out across various sectors and geographical areas to obtain a broader range of perspectives. Moreover, awareness and training initiatives for both recruiters .

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