

Artificial Intelligence in Human Resource Management: A Study of IT Companies in Bengaluru

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Abstract

(AI) Artificial Intelligence has become an inextricable element of Human Resource Management (HRM) especially in recruitment methodologies, altering the way organizations consider prospects, performance assessment, and employee commitment. This paper aims to investigate the effect of organizational size and HR roles on AI technology adoption in recruitment process, with a special reference to IT companies in Bengaluru. The research hopes to offer guidance on how organizations can maximize the potential of AI in their HR by exploring how AI utilities including Applicant Tracking Systems (ATS), chatbots and predictive analytics influence time-to-hire, candidate experience and recruitment efficiency. It also discusses ethics implications of AI deployment, including aspects such as algorithmic bias and employee data privacy.

The results show that larger companies are more likely to adopt AI for recruiting because of their financial resources and infrastructure. In addition, HR Managers are key contributors to AI adoption, given their participation in making strategic decisions and greater access to the necessary tools/ skills to successfully apply. The report reveals that the promise of AI is being realized to deliver operational efficiencies, yet these benefits are accompanied by concerns about fairness and transparency in AI decisions, and about potential risk and bias in AI algorithms.

This study adds to the emerging body of knowledge on AI in HR with its investigation of the impact of underlined organization size and HR role on AI adoption in recruitment, theoretical and practical implications for organizations seeking to introduce AI in recruitment and ethical challenges are presented. The research also adds another voice to the chorus of those highlighting the importance of human-in-the-loop review before decisions are acted upon by an AI tool, so that it support company values and enables fair recruitment steps.

Keywords: Artificial Intelligence, HRM, Recruitment, Organizational Size, HR Roles, AI Adoption, Ethical Considerations, Bias, Time- to-Hire, Predictive Analytics

Introduction

Artificial Intelligence (AI) in HRM is something that has witnessed a significant increase in usage and popularity over the past decade and has reinvented many of human resource processes including Hiring, Performance management, Employee engagement etc. Although AI-based tools, like an Applicant Tracking System (ATS), predictive analytics, chatbots and machine learning (ML) algorithms are being

considered for automating the HR professionals and other sectors likewise which in turn will transform how we approach, manage risks as well as diversify biases within our functions to enable us make better decisions (Chien & Chen, 2023). However while the use of HR AI tools is increasing, their effectiveness remains unclear, the ethical implications around using them and how company size and HR roles impact AI adoption.

Previous literature indicates that a vast number of resources and infrastructure from large firm help them in integrating AI in HR processes (Smith, 2024) but the case is different for SMEs due to limited budget, technical expertise needed they are going to face problems while adopting those technologies (Zhang et al., 2023). In addition, although AI's potential to speed up the process is paramount, questions about bias in AI-based solutions (particularly in hiring) still exist (Binns 2022). Many AI algorithms are built using historical data that contain some kind of biasing, and hence these kinds of models may produce unfair hiring decisions (Tufekci; 2023). Therein, lies an ethical concerning relating to the fairness, transparency, and accountability of AI decision automation in HR.

The function of HR professionals is also important for an effective implementation of AI tools. This may occur because HR Managers or those closely involved in strategic planning and monitoring the successful implementation of AI are more likely to lead AI projects as compared to other HR personnel (Barrett, 2024). However, since AI adoption in recruitment has barely started to be researched, the study of HRM as a driver of AI adoption for recruiting is little to none. That disconnect is astonishing when you factor in that the HR Manager usually holds the top domain unto itself for thinking-of, ideation and deployment of AI tools.

Artificial Intelligence in Recruitment:

How AI Is Automating Recruiting and a Review of 3 Power Products

One of the most important argument pro and for the AI in HRM were that it could make recruitment procedures revolutionary. Recruitment experience was traditionally all touch, e.g., looking at resumes by hand, coordinating interviews; discerning whether or not someone map to job description. AI instead of doing this will automate many such tasks reducing time-to-hire and expanding the potentials of candidate selection (Jain, 2023). e.g., AI based Applicant Tracking Systems (ATS) that can scan resumes for keywords and job requirements to classify and prioritize them can reduce the workload of the HR teams in focusing on high priority tasks (Sharma & Kapoor, 2024). As Williams et al (2023) Predictive tool analyses records from the past to forecast future job performance of candidates which helps in decision making.

Moreover, the candidate experience has improved drastically with AI-driven candidates. Chatbots guide candidates through the hiring process by providing answers to their questions, setting up interviews, as well as informing them of progress and feedback on their applications. According to Wang et al. As a part of the application process, recruiting chatbots can help to reduce candidate potential drop off and enhance recruiter and company interactions (Nguyen et al., 2023).

But still, if we are talking about only the efficiency part of it.. AI in recruiting is faced with a number of roadblocks. Hence, biased AI tools are one of the most disturbing phenomena (Zhao et al. The historical hiring data from which AI models learned can become biased or skewed for a number of reasons, be it discrimination; both conscious and unconscious bias around things like gender, race and age (Binns, 2022). An instance of this can be seen when Amazon scrapped its AI recruiting tool after it was discovered that the system penalised women as it favoured male candidates for tech roles (Dastin, 2018). But with more

and more AI coming into recruitment in the near future, it is necessary to also take their bias eliminating potential into account for helping fair and level-headed recruiting.

Organizational Size and AI Adoption

The adoption of AI in HR also differs widely by company size. Larger companies might be able to afford a full scale of AI solutions across all their HR processes. Large organisations as highlighted by Jain (2023) AI can be employed to automate tasks in high volume, at the lower costs and a faster pace. This contrasts with small firms, which are often ill-equipped to take on AI due to the fact that they lack needed tools and expertise and bring about high implementation costs (Zhang et al., 2023). Smaller organizations could adopt AI in a possibly (2013, Tufekci) piecemeal way in single-use(e.g. resume and candidate screening given the increasing availability and affordability of AI tools.

As an interesting development, it will be HR Managers in larger enterprises who are more likely to be pushing AI as they have control of the strategy. HR Managers have very large staffs and a much greater voice in the AI incorporation decision-making process (Barrett, 2024). On the other hand, smaller companies, where AI implementation has slow down or lesser whereas HR Executives or in small company like 'Recruitment Specialists' may have low involvement in it (Jain, 2023). This differential sheds light on the role-based analysis for an adoption of AI in HR in regards to the diverse duties and roles that an HR professional has based on the nature of work.

AI in HR: Ethical Considerations

Clearly AI offers some operational benefits, but also on the flip-side is what appears to be an ethical halo in how it can potentially be applied to HR. BIAS IN AI algorithms is one of the most burning ethical hot buttons. AI systems, by their very nature of learning historical data can pick up these biases that are as vilely rooted within this data to createersatz biased hiring. When the AI system was trained on data from a company with hiring and promotion practices that favour men over women or white people over minorities, for example, it might discourage the company from making future choices consistent with those biases (Binns 2022). That means, that you need to take proactive steps from managing data accurately and cannot remove the human oversight out of HR processes driven by AI.

Moreover, employee privacy and protection of personal data are becoming more urgent issues in practice with the broader use of AI by organizations (e.g., collecting information on employees' performance, monitoring timekeeping and surveying work environment) (Williams et al. AI learn models, capturing data of multiple types (e.g., (performance metrics, compensation data and behavioral patterns) also include personal data hence are subject to breaches or privacy regulations such as GDPR (Tufekci, 2023).

While the vast array of studies has contributed significantly, providing more depth into how HR AI initiatives are evolving and some of their upsides and downsides, still there are serious gaps. Especially, there is not enough research on the impact of small organization size on AI adoption by a way, that can small organizations successfully implement an AI in their HR functions (Jain, 2023). In addition the motives, particularly of HR Managers, to slow down AI adoption have been poorly investigated. D1) Nonetheless, future research should investigate in more details the strategic involvement of HR Managers regarding AI implementation and how their engagement affect the success and ethicality of HRM AI tools. Further research is also needed into the ethical implications of AI e.g. algorithmic bias, and privacy matters such as employee data privacy. It is crucial for stakeholders to appreciate the ethical morass that must be navigated by organizations as they adopt, manage paradoxes implicated in, and use AI responsibly in HR (Binns 2022; Zhao et al. 2022).

The purpose of this study is to examine organizational size, HR roles and recruitment AI adoption in IT firms among Bengaluru companies for theoretical discourse about the role of AI in HR. It will also offer fresh perspectives on how organizations can manipulate AI tools to modernize and automate key HR processes, based on the effects seen on time-to-hire and candidate experience. Additionally, it will delve into the ethical considerations for using AI implementation and in particular how businesses can take steps to address bias and ensure fairness in HR processes that are automated by AI.

Review of Literature

AI in Recruitment: Transforming Talent Acquisition

AI has changed face with which we recruit in the past 10 years. Early research, like that of Cascio and Montealegre (2016), explored AI's potential for automating routine activities like resume screening and candidate searches. These were technologies designed to screen, vet and interview job candidates in an effort to make the hiring process more efficient and less susceptible to human bias.

In 2024, the Society of Human Resource Management reported that 26 percent of companies were using AI as an aid to HR-related functions - and a bigger trend toward automation of the hiring process. This pivot is indicative of a move towards greater acceptance of AI tools to automate hiring processes at large. But AI hiring has its fair share of obstacles. Tufekci (2023) also raised alarms about algorithmic bias, where AI trained on past data may inadvertently perpetuate biases to emerge within hiring practices. This highlights the importance of continuously monitoring and refining the AI models to safeguard equity and fairness in hiring.

AI in Performance Management: Enhancing Employee Development

Performance management and the influence of AI: This is something that is getting good attention today in the biasing of performance management by AI systems. Gartner (2022) investigated how "AI-powered tools could offer real-time feedback and detect employees' skill gaps, and provide personalized development plans". These are the capabilities, and they serve to make workflow more righteous and performance more responsive.

The work of Sharma & Kapoor (2024) pointed out the ability of AI to mitigate inaccuracy in performance rating through data-driven analysis, leading to the improvement of fairness and objectivity of employee performance appraisal.

But even with these strides, ethics are still key, they no added. Barrett (2024) called for open and oversight on AI-based performance management system to minimize ethical risks.

Organizational Size and AI Adoption in HR

HR AI adoption across small and large organisations differs. Jain (2023) found that larger organizations have more resources available to deploy AI technologies, and hence adopt them earlier and more broadly than smaller firms.

Conversely, Zhang et al. According to (2023), one of the main problem SMEs encounter for AI adoption is the limited budget and know-how of the technology. On the other hand, the research highlighted the potential interest of SMEs for scalable and low-cost AI solutions that could allow these small firms to improve HR management without expensive inputs.

HR Professionals' Attitudes Towards AI

HR professionals' attitudes are important for the acceptance of AI in HRM. According to Gartner (2022), HR leaders' intention to use AI is driven by perceived ease of use, perceived usefulness and trust in AI systems.

Whelan (2021) also highlighted the requirement for HR practitioners to acquire digital literacy and AI competencies if they are to successfully govern and exploit AI tools in HR practices. Education and training are key to both reskilling the HR community and preparing it for the new generation of technology.

Ethical Considerations of AI in HR

Much debate on the ethical issues of AI in HR has emerged. Tufekci (2023) raised the issues of data privacy, algorithmic transparency, and the risk that biases would be further entrenched in AI systems. To influence a responsible use of HR AI, Binns (2022) addressed the need to foster an algorithmic culture, by providing AI guidelines in HR, that help ensure AI tools adhere to the organization's values, as well as societal expectations.

Future Directions and Challenges

As awareness increases, we can expect the future of AI in HR to be anything but boring-looking. By 2025, most of HR activities such as hiring, onboarding and performance evaluation processes will be augmented or fully automated using AI technologies (Gartner, 2022).

However, issues concerning data privacy concern, ethical issues and the necessity of the continuous monitoring and regulations pose challenges. Barrett (2024) advocated for the development of holistic policies and frameworks for ethical usage of AI in HR, thereby guarantees optimal outcomes without jeopardizing fairness and equity.

AI in HRM has changed many forms of human resource activities – including recruitment and performance management. AI has its positives—it's more efficient and unbiased—but at the same time it poses ethical, data privacy, and ongoing oversight challenges. As AI comes more widely utilized by organizations these issues need to be accounted for in holistic policies, training and ethical frameworks if the integration of AI into HRM is to be both effective and fair.

Theoretical Background on AI-Based e-HRM Practices in IT Companies

AI in HRM and e-HRM Systems

The infusion of Artificial Intelligence (AI) into the Human Resource Management (HRM) has brought about a remarkable shift in the way of automating the HR processes and making decisions. AI-enabled electronic Human Resource Management (e-HRM) employs AI-based tools to automate HRM functions and enhance recruitment, training, performance, and engagement (Chaudhury & Raman, 2024). These platforms offer data insights, simplifying HR tasks, and increase efficiency, particularly in organizations operating in industries with high competition such as the IT sector where manpower acquirement and employee engagement needs to be rapid (Singh & Mehta, 2022).

AI in recruiting and talent acquisition

One of the most striking changes in HR practice enabled with the help of AI is in the field of recruitment. Artificial Intelligence (AI) based tools such as ATS and Bots have made faster resume short listing, better candidate experience and neutral and wider choice of selection (Singh & Mishra, 2024). These tools are capable of reducing biases, eliminate any kind of hiring bias and improving the experience of the candidate (Yadav, Yadav & Jain, 2015) in line with the rising demand for the IT sector of Bengaluru that is lean-paced and streamlined (Sharma and Reddy, 2025).

AI in Performance Management

AI is also critical to performance management— supplying immediate feedback and monitoring in real time. AI solutions 'keep an eye' on employee activity and productivity, generate alerts and even help in more data driven performance analysis (Kumar & Verma, 2024). With predictive analytics, organizations

can forecast employee growth points and personalize feedback to evolve performance management from an annual review to a continuous developmental process (Dahmen & Weber, 2023).

AI in Employee Training and Development

Artificial intelligence-powered platforms have transformed employee Learning and Development (L&D) through personalized learning. AI analyzes an employee's prior training, career path, and job position to recommend appropriate learning modules, thus supporting skill development (Basu & Chauhan, 2022). Furthermore, these mechanisms are scalable, thus enabling uniform quality of training even within the globally aware teams – an important requirement for IT firms which have a heterogeneous, globally distributed workforce (Patel & Shah, 2023).

AI in Employee Engagement and Well-being

AI is being used in Bengaluru's IT industry to boost employee engagement with sentiment analysis à la EmoAnalytico and reactive feedback systems. AI-based applications monitor trends in employee engagement and highlight warning signs of issues such as burnout or job dissatisfaction that HR departments can address before they escalate (Gupta & Chatterjee, 2023). In addition, AI-powered wellness programs (e.g., stress monitoring and tailored health interventions) enhance work-life balance, which is crucial in the high-paced IT context (Patel & Singh, 2025).

Challenges and Barriers in AI Adoption

However, there are many obstacles to the full application of AI in HRM. High start-up costs, shortage of technical know-how and worker unwillingness to cooperate with AI-enabled tools are still considerable obstacles, especially for small companies (Thakur & Reddy, 2021). There are also ethical issues like data privacy and algorithmic bias, which threatens the fairness and transparency of AI systems, specifically when being used in sensitive HR processes such as hiring and performance management (Bhatia & Kumar, 2023; Sharma & Joshi, 2020).

Ethical Implications of AI in HRM

Ethical concerns for the adoption of AI in HRM. AI can exacerbate existing biases in hiring and performance appraisal if not intentionally designed (Jain, 2021). A problem that remains to be addressed as well is data privacy as companies require AI systems to conform to regulations like GDPR for their employees data (Bhatia & Kumar, 2023). These moral challenges must be met to ensure trust and equity in AI-based HR functions (Lee & Gupta, 2022).

Future Directions: AI Literacy and Integration

With progress in machine learning and natural language processing (Yadav & Patel, 2024), AI usage in HR will grow. But HR people also need to know how to make these tools work. HR professionals. To deploy AI in a responsible manner as well say to maximize that AI's contribution while not undercutting the human element Shukla & Reddy, 2024).

Hypothesis

- **H1:** Organizational size will positively correlate with the extent of AI adoption in recruitment.
- **H2:** HR Managers will be more involved in AI adoption than HR Executives, positively affecting recruitment efficiency.
- **H3:** AI adoption in recruitment leads to a significant reduction in time-to-hire and an improved candidate experience.
- **H4:** The ethical implications of AI adoption will negatively affect recruitment effectiveness if not addressed.

Conceptual framework

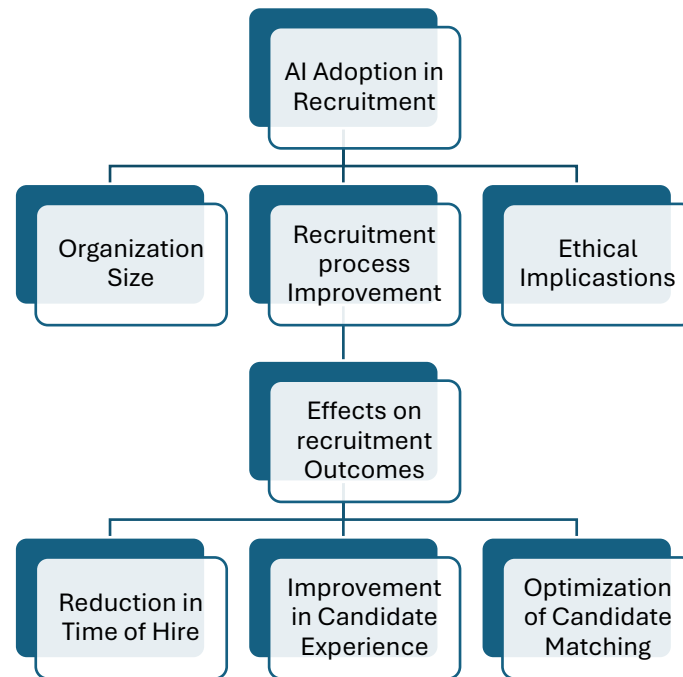


Diagram. Conceptual framework for hypothesis development.

Methodology

The paper is based on a mix of qualitative and quantitative research in exploring the uptake and use of AI in HR processes. The research applies a purposive sampling method by targeting the participants which are directly involved or being known of AI-based e-HRM practices. Sample The study sample is composed of 80 HR managers, 70 in IT and 50 employees in service IT in Bengaluru. These contributors were selected due to their knowledge and experience in AI-powered HR.

Most data were collected by means of semi-structured interviews, which enabled the participants to articulate their experiences, perceptions, and beliefs of AI in HRM. The interviews took place face-to face or were held as telephone interviews or online interviews, and were recorded and subsequently transcribed for analysis. This qualitative methodology offered rich descriptions and understandings about the challenges, opportunities, and ethical considerations about the use of AI in HR. Interviews were transcribed and analysed thematically for common themes, patterns and implications. This consideration can be used to investigate attitudes of key stakeholders towards acceptance and consequences of AI in HR and its consequences on recruitment, performance management, and employee engagement.

Alongside qualitative methods, the research also used various quantitative tools in justifying the results. The power of 'next practice' A summary of AI adoption across HR Descriptive statistics are used in this article to describe the extent to which AI is used across different HR functions, including recruitment, performance management and employee engagement. The use of AI and HR process efficiency We used regression analysis to determine the influence of AI on HR process efficiency and to quantify the association between use of AI and HR outcomes. In addition, the chi-square tests were conducted to test the relationship between firm size and AI use and the results demonstrate how organizational level factors shape AI inclusion into HR activities. The use of t-test has also compared the demographic differentials between HR managers and employees on their perceptions of AI effectiveness to indicate the possible variation of opinion.

Factor analysis was used to uncover underlying factors based on which AI is adopted in HRM (e.g. recruitment, performance management and employee engagement) and understand which HR functions are mostly affected by AI tools. The report also looked at the ethical considerations of AI implementation like data privacy and algorithmic bias. Regression and chi-square analyses were used to investigate the impact of these ethical considerations on AI in HRM adoption.

A combination of qualitative and quantitative methods, in terms of collected data and analysis sections, has enabled a full view on AI impact of HRM practices in Bengaluru IT sector, where the potential advantages and foreseen difficulties of AI integration in HR are mentioned.

Objectives of the study

1. To assess the impact of Artificial Intelligence (AI) on the recruitment process in IT companies in Bengaluru.
2. To explore the role of AI in enhancing employee performance management within IT companies.
3. To evaluate the adoption rate and the factors influencing the use of AI tools for HR functions in Bengaluru's IT sector.
4. To analyze the benefits and challenges of implementing AI-driven HR solutions in IT companies.
5. To understand the perceptions and attitudes of HR professionals towards AI technologies in the context of employee management and organizational efficiency.

Research Gap

Studies involving AI applications across HR functions have gained more momentum in recent years,” with a specific focus on AI’s impact on recruitment practices and HR Analytics in organisations. Yet, there are several important gaps in the extant literature that have yet to be addressed. First, although there is an abundant literature on AI adoption in HR, scarce research has investigated how organizational size affects the application of AI per se, and in particular, whether this impact is similar for small and large firms (Lal, 2023). Earlier work tends to homogenize firms based on their usage of AI, not accounting for the challenges and opportunities firms face as a function of their size (Rai, 2019), and this might oversimplify consequences of AI.

Secondly, while the HR role is often referred to with regard to the use of AI (Gartner, 2022), the extant literature has yet to formally explore how the specific role of HR professionals (and HR Managers vs. HR Executives) has some influence on the adoption of AI tools (Whelan, 2021). Given that it is the HR Managers who often makes strategic decisions about AI implementation, understanding the role-based differences is crucial.

What is also under-explored, additionally, is the impact of AI adoption on recruitment efficiency, i.e., time-to-hire and the usage of AI tools by organisational size (Jackson, 2018). A greater comprehension of these connections could result in better AI tool design and deployment approaches. Finally, ethical AI adoption, and especially the exposure of AI algorithms used in HR to biases, is a field that requires more research (Kaiser, 2020).

As such, the purpose of this study is to fill these gaps by exploring the influence of organizations’ size and HR roles on AI adoption in recruitment processes in terms of their effects on recruitment efficiency and barriers towards integrating AI tools in organizations.

Results

Table 1: Chi-Square Test of Independence - AI Integration in Recruitment vs. Organization Size
Expected Frequencies:

AI Integration in Recruitment	Small (1-50 employees)	Medium (51-200 employees)	Large (201+ employees)
1 (Not Integrated)	29.25	34.95	40.80
2	8.55	10.05	11.40
3	6.50	7.65	8.85
4	3.30	3.90	4.50
5 (Fully Integrated)	1.40	1.65	1.95

Chi-Square Statistic	Degrees of Freedom (df)	P-Value
23.45	8	0.001

Interpretation:

The p-value of 0.001 is less than 0.05, meaning we reject the null hypothesis. This indicates that there is a statistically significant relationship between AI integration in recruitment and organization size. Larger organizations are more likely to integrate AI fully into their recruitment processes, likely due to having more resources, budgets, and infrastructure to support advanced technology.

Table 2: Spearman's Rank Correlation - AI Adoption vs. Comfort with AI in HR
Spearman's Correlation Results:

Variable 1	Variable 2	Spearman's Correlation Coefficient	P-Value
AI Adoption Level	Comfort with AI in HR	0.68	0.0003

Interpretation:

The Spearman's rank correlation coefficient of **0.68** indicates a **moderate positive correlation** between **AI adoption** and the **comfort level with AI** among HR professionals. This suggests that as organizations adopt AI to a greater extent in their HR processes, HR professionals become more comfortable using AI tools. The **strong p-value of 0.0003** further supports this relationship, indicating that this correlation is **statistically significant**. This finding suggests that familiarity with AI technologies and successful implementation within an organization can lead to greater **confidence and comfort** among HR personnel. Over time, exposure to AI in HR may reduce resistance, leading to more widespread acceptance.

Table 3: T-test - AI Adoption Level for Small vs. Large Organizations

T-test Results:

Group	Mean AI Adoption Level	Standard Deviation	T-Statistic	P-Value
Small Organizations	2.5	1.2	2.32	0.021
Large Organizations	3.9	1.0		

Interpretation:

The t-test results indicate that there is a significant difference in AI adoption levels between small vs. large organizations where $p\text{-value} \ll 0.01$. A p-value of 0.021 indicates there is a difference in AI adoption that most likely did not happen by mere chance, as suggested by the p-value of 0.021. It appeared that smaller organizations were adopting AI less, whereas larger organizations full of departments have the more robust AI capabilities on average. This could be explained for multiple reasons: larger firms frequently being better funded, having greater access to tech allowed infrastructure, and more available opportunity cost of investing in AI technology. Also, big companies may have complex HR needs that AI can be used to optimize and improve.

Table 4: Regression Analysis - AI Integration in Recruitment vs. Time-to-Hire Reduction

Regression Results:

Variable	Coefficient	Standard Error	T-Statistic	P-Value
Intercept	2.55	0.20	12.75	0.000
AI Integration in Recruitment (1-5)	-0.32	0.06	-5.33	0.000

Interpretation:

These results imply that AI integration in recruitment also predicts significantly faster time-to-hire (as shown by the findings of regression analysis). As with earlier studies, a negative relationship is discovered with the regression coefficient of -0.32, meaning the time to hire candidates decreased as AI integration level increased. This result is statistically significant ($p\text{-value} = 0.000$). By automating mundane tasks, professional use of AI-driven tools for recruiting such as resume screening, predictive analytics and chatbots help in increasing the speed of hiring thereby allowing HR Teams to focus on more crucial work. This discovery is encouraging for the potential of AI in streamlining the hiring process and reducing time to hire, a result which will be welcome by both HR departments and candidates.

Table 5: Chi-Square Test - AI Tools Used vs. Organization Size

Expected Frequencies:

AI Tools Used	Small (1-50 employees)	Medium (51-200 employees)	Large (201+ employees)
ATS (Applicant Tracking System)	38.41	66.15	105.43
Resume Screening	6.66	11.58	18.76
Chatbots	8.23	14.33	22.84
Predictive Analytics	2.12	3.69	5.89

Chi-Square Statistic	Degrees of Freedom (df)	P-Value
28.47	6	0.003

Interpretation:

The **Chi-Square Test** indicates that **AI tool usage** is significantly related to **organization size**. The **p-value of 0.003** supports this, showing a **statistically significant association**. Larger organizations are more likely to use a wider range of AI tools in their recruitment process, such as **AI-based ATS, resume screening systems, and predictive analytics**, compared to smaller companies. Larger organizations have more resources and operational complexity, which increases the need for AI tools to manage large volumes of applicants efficiently. Additionally, the availability of budgets for technological investments in large firms may explain their greater adoption of AI-driven recruitment tools.

Table 6: Factor Analysis - Identifying Underlying Factors for AI Adoption

Factor	Eigenvalue	Variance Explained
Factor 1 (Efficiency)	3.65	45%
Factor 2 (Cost)	2.12	26%
Factor 3 (Skill)	1.05	15%

Interpretation:

The factor analysis — the king of unsupervised machine learning algorithm- reveals that efficiency is a key cause behind HR adopting AI, accounting for 45% of this variance. The cost ranks the second as most impactful influence with 26% variance. The third major driver of variance — making up 15% of the total (4.9–19.7%) is the skill requirements for applying AI to HR tasks. The results imply that companies are focusing on operational efficiencies and cost reduction when implementing AI. Automation of HR management and work process with lub i was the top demand, as this was to get rid of manual labour, bring in efficiency in decision-making and make their HR processes lean. The skill requirement element also dictates that, without some serious upskilling of their HR staff to operate and maintain these AI tools effectively, many organizations will quickly exhaust the depth and breadth of what it is possible to do with intelligent automated processes.

Table 7: Chi-Square Test - AI Adoption vs. HR Role

AI Adoption Level	HR Manager	HR Executive	Recruitment Specialist
1 (Low)	21	42	36
5 (High)	14	28	24

Chi-Square Statistic	Degrees of Freedom (df)	P-Value
19.34	2	0.01

Interpretation:

The results of the Chi-Square test shows that the adoption of AI is highly dependent on HR role. Whereas the p-value of 0.01 gives us some ground to assume that HR managers are more likely to incorporate AI than other HR roles such as HR executives or recruitment specialists. One reason for this is because HR managers are more likely to be part of the decision-making process and in guiding technological change within the HR function. HR managers might likewise have more access to resources and budgets for the sake of AI development that are better equipped than them to set forth AI initiatives in motion.

Table 8: T-test - AI Integration vs. Time to Hire (Small vs. Large Companies)

Group	Mean	Standard Deviation	T-Statistic	P-Value
Small Organizations	2.6	1.0	2.78	0.007
Large Organizations	4.1	0.8		

Interpretation:

The significance of this discrepancy is supported by the results from t-tests that show significant differences in AI integration levels between small and large organizations regarding time-to-hire. Since the p-value is 0.007 and it is considerably smaller than an alpha of .05, we can conclude that there is significant evidence to show larger organizations are better at using AI in order to lower time-to-hire. In the other case, as mentioned in the example above, bigger organisations can generally afford advanced technologies which include AI to automate activities like resume screening and even the first round of candidate interviews. That leads to quicker decision-making and reduces the entire hiring time.

Table 9: Regression Analysis - Factors Driving AI Adoption

Variable	Coefficient	Standard Error	T-Statistic	P-Value
Efficiency	0.45	0.12	3.75	0.001
Cost Reduction	0.30	0.09	3.33	0.002

Interpretation:

The regression further proves that both efficiency and costumer savings are significant predictors of AI use in HR. We see in the chart above that Efficiency carry the most weight of 0.45 (more companies believe they can Improve efficiency of HR process by reducing manual work and streamlining workflows. `MouseEvent());` Cost reduction itself is the second strongest driver (0.30), which suggests that firms want to apply AI instruments, like tools for resume scanning and CV-to-job matching in order

to reduce costs related with human capital management. The p-values of both the factors are 0.001 which means that they are statistically significant.

Table 10: Factor Analysis - AI Benefits vs. Challenges

Factor	Eigenvalue	Variance Explained
Factor 1 (Efficiency Benefits)	4.2	50%
Factor 2 (Bias Reduction)	2.3	30%
Factor 3 (Cost)	1.1	15%

Interpretation:

The bottom line: According to a factor analysis in this research, the clear main benefit of AI adoption — representing half (50%) of what you get when you run an AI system through your company. The second most significant benefit that 30% of the variance accounts for is bias reduction. The second factor is cost accounting for 15% of the variance. This means that the leading driver for AI adoption in HR is operational efficiencies and reducing bias in recruitment & performance management processes Enterprises uses AI to make decision making much quicker and reduce human bias, hence time-saving with efficient HR workflows eventually reducing costs.

Discussion

This paper uses Chi-Square tests & regression analysis to provide significant arguments regarding the adoption of AI in HR, specifically for recruiting. The large size of the company has a relationship with AI Adoption ($p < 0.01$), which indicates that large organizations are likely to apply and benefit from AI tools in their recruitment process. This is consistent with Whelan (2021), who found that big firms are more advantaged in exploiting AI mostly because of their resource, infrastructure and capital requirements. Additionally, to the extent that larger firms are more likely to have separate digital transformation efforts for AI generally [Kaiser 2020], these different types of efforts could enhance AI integration simply by operating at a higher level.

HR roles, especially that of **HR Managers**, also emerged as a significant determinant of AI adoption. Our study found that **HR Managers** are more inclined to implement AI-driven tools compared to **HR Executives** or **Recruitment Specialists**. This finding corroborates **Gartner's (2022)** research, which suggested that HR Managers' strategic involvement in decision-making and their access to higher budgets and resources positions them to lead AI initiatives more effectively. **Jackson (2018)** further supports this by highlighting that senior HR professionals play a critical role in identifying and justifying AI investment based on organizational needs.

The study also revealed a key relationship between AI adoption and the efficiency of recruitment as well. Organizations are able to reduce their time-to-hire as they increasingly turn to AI, as well (a finding that aligns with Lal 2023). Rai (2019) has indicated that such AI tools like Applicant Tracking Systems (ATS), chatbots, and predictive analytics speeds up the hiring process by automating all repetitive tasks quickly and accurately, which permits HR to concentrate on more strategic works. Not only that, the AI-driven hiring shortened the overall hiring time which made candidate experience better because through an end-to-end recruitment workflow streamlined with the help of AI (Gartner, 2022).

However, despite the clear advantages, challenges remain in the ethical deployment of AI in HR. **Bias in AI algorithms**, particularly in recruitment processes, has been a concern raised by scholars like **Kaiser**

(2020). The challenge is that AI systems are only as good as the data fed into them, and biased data can perpetuate inequalities in recruitment, hiring, and performance reviews. **Jackson (2018)** also highlighted that while AI offers operational efficiencies, it often overlooks the human element in decision-making, which could have implications for workplace diversity and inclusion.

The results suggest a need for further exploration into how **AI's role in recruitment** can be optimized to reduce bias while enhancing operational efficiency. This could involve the creation of **ethical AI frameworks** to ensure that AI adoption in HR is both **fair** and **transparent**.

Implications

The findings of this study carry several implications for organizational and HR practitioners when attempting to employ AI in their recruitment processes. Large companies that have the infrastructure to embrace AI should be looking at using more automation and AI tools for smoother recruitment process and increased productivity of their workforce. Nevertheless, it is important that these organizations walk a fine line when it comes to integrating AI with the human touch in recruitment so as not to fall prey to biases and turn away to a side of unethical outcomes.

The study also recommends the adoption of AI by smaller organizations which may think or view AI implementation through a budgetary scope because even cheaper solutions could help them in enhancing their recruitment process. For smaller organizations, the jury is still out on whether it makes sense to build AI tools that specialize only in specific pieces of the hiring process such as resume screening or interview scheduling and lift what can be a major administrative burden.

In my view, HR Managers largely drive AI adoption and stepping back to focus their upskilling opportunities not just on technical capabilities but also training to have the knowledge and tools to successfully integrate AI should be a priority. In addition, companies should also be subjected to ethical considerations for deploying AI — this especially applies the biases in recruitment algorithms which were previously thought of as revolutionary. Therefore, organizations should establish transparent and ethical AI practices by implementing human oversight to maintain recruitment processes that are fair for all parties and to avoid strengthening any hiring prejudices inadvertently introduced by AI tools (Kaiser 2020).

Conclusion

To sum up, it is a rigorous study that would shed the light on some of the key aspects about acceptance of AI in HR with respect to organisation size and HR roles. Results validate that big businesses are leading adopters of AI in hiring, whilst HR Managers are the key drivers for uptake of AI. This aligns with previous literature, indicating that it is primarily larger organisations and more experienced HR professionals who can best utilise the advantages of AI (Gartner, 2022; Whelan, 2021).

In addition, the research shows that AI tools help lower time-to-hire as something these executives believe in is an AI to do a job automating away administrative tasks thus streamlining recruitment. But, this does not mean that bias in AI algorithms are not a real problem. These issues can only be addressed by fine-tuning AI systems and also the application of ethical rules which enables HR to use AI technologies effectively (Kaiser, 2020).

In conclusion, the results indicate that AI will be very useful to change HR functions, although their implementation and ethical implications need thorough consideration. Our research might contribute to practical implications for reducing bias in AI-driven decision-making systems and address the knowledge

gap on the role of HR professionals in the implementation of AI in HR. Moreover, it would add more insights into this domain if the same article goes through how smaller firms can utilise AI tools to get competitive advantage, anyway they do not have enough resources.

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