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AI and Automation in Talent Acquisition: A Study of Perceptions and Adoption in Indian Organisations

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Abstract: *Artificial Intelligence (AI) and automation are rapidly transforming organisational functions, including human resource management and talent acquisition. While national-level studies, such as the NASSCOM AI Adoption Index 2022, show that Indian enterprises are moving from experimentation to structured AI use cases, empirical evidence focused specifically on AI-driven recruitment remains limited. This study examines the extent of AI adoption in talent acquisition and the perceptions of its usefulness, risks, and ethical concerns among HR professionals, line managers, and management students in Maharashtra, India. A structured questionnaire was administered to 152 respondents to capture data on AI tool usage, perceived usefulness, perceived risk, and intention to use AI-based recruitment tools. Descriptive statistics, chi-square tests, paired-samples t-tests, and one-way ANOVA were used for the analysis. The results indicate that 61.8% of respondents report using at least one AI-based recruitment tool in their organisations, with AI-enabled applicant-tracking systems and automated resume screening being the most prevalent. Perceived usefulness ($M = 3.94/5$) was significantly higher than perceived risk ($M = 3.21/5$; $t(151) = 6.47$, $p < 0.001$). However, concerns regarding algorithmic bias and the need for human oversight remain strong. Organisational size was significantly associated with AI adoption ($\chi^2(2, N = 152) = 11.27$, $p = 0.004$), and HR professionals reported higher usefulness scores than management students ($F(2,149) = 3.41$, $p = 0.036$). The study concludes that AI and automation are perceived as valuable enablers of talent acquisition, but stakeholders favour a human-in-the-loop--- model to ensure fairness, transparency, and sustainable adoption.*

Keywords: Artificial Intelligence, Talent Acquisition, Recruitment, Automation, HR Analytics, NASSCOM AI Adoption Index, India, Empirical Study

I. INTRODUCTION

AI is emerging as a general-purpose technology with the potential to reshape the Indian economy and its digital future. The NASSCOM AI Adoption Index 2022 estimates that AI adoption could contribute up to USD 500 billion to India's gross value added (GVA) by FY 2026, with core sectors such as BFSI, CPG & Retail, Healthcare, and Industrials & Automotive accounting for approximately 60% of this impact. At the enterprise level, AI is increasingly deployed for optimisation, customer-centric innovation, and growth across functions, including IT, product development, and customer service.

In this broader transformation, **talent acquisition** has become a key area of AI-enabled innovation. Organisations facing high candidate volumes and tight labour markets are using AI tools for automated résumé screening, candidate matching, chatbots, online assessments, and recruitment analytics. These tools promise operational efficiency, improved candidate-job fit, and data-driven decision-making, but also raise concerns about fairness, algorithmic bias, and the dehumanisation of recruitment.

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While NASSCOM's national-level index maps overall AI maturity and shows that most Indian organisations are at an "Enthusiast" level (score 2.45/4), where AI projects and limited use cases exist but full-scale integration is yet to be achieved, **micro-level adoption patterns in HR and recruitment are underexplored.** This study addresses this gap by empirically examining AI and automation in talent acquisition in India.

The objectives of this study are as follows:

- To assess the current level of AI-based tool adoption in talent acquisition.
- To evaluate perceptions of the usefulness, risk, and ethical concerns associated with AI-enabled recruitment.
- To analyse differences in perceptions across HR professionals, line managers and management students.

II. LITERATURE REVIEW

AI Adoption in India

The NASSCOM AI Adoption Index provides a comprehensive view of India's AI maturity based on 350 enterprise surveys and approximately 30 executive interviews across BFSI, CPG & Retail, Healthcare, and Industrials & Automotive. The index evaluates six dimensions: strategy and impact, investment, people and operations, data and technology, knowledge output, and ethics, governance, and control. Enterprises are categorised into four stages—Explorer, Enthusiast, Expert, and Evangelist—with most Indian firms currently in the "Enthusiast" stage, indicating emerging strategies and limited but growing use.

The report highlights that more than 60% of enterprises allocate less than 10% of their IT budget to AI, and many struggle with legacy IT, data silos, and difficulties objectively quantifying AI benefits. It also notes that predictive analytics and AI-powered chatbots are among the most widely used AI technologies across all functions. These findings suggest a context in which AI is recognised as strategic but still maturing, with substantial room for deepening adoption within specific functions such as HR.

AI and Automation in Talent Acquisition

In the HR domain, AI is commonly applied to:

Sourcing and attraction: Programmatic job advertising and social media mining.
Screening and shortlisting: AI-enabled applicant tracking systems (ATS), resume parsers, and matching algorithms.
Assessment: Online tests and video interviews with AI-based scoring and analysis.
Candidate engagement: Chatbots for query handling and automated communication workflows.
Analytics: dashboards for time-to-hire--, source effectiveness, and quality of hire.

International studies (internationally) suggest that AI-based recruitment can reduce time-to-fill, standardise screening criteria, and improve recruiter productivity. However, issues such as algorithmic bias, lack of transparency in automated decisions, and candidate discomfort with AI assessments have been frequently reported.

Benefits and Risks

The reported benefits include:

- Efficiency gains and reduced manual workload.
- Better candidate-job fit through pattern recognition and ML-based matching.
- Improved visibility into recruitment metrics and pipeline health.

The risks and concerns include the following:

- Reinforcement of historical biases in the training data.
- Opaque "black box" decisions that are hard to explain to candidates or regulators.
- Over-automation can lead to impersonal candidate experiences and potential reputational damage.
- Data privacy and regulatory compliance challenges.

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Given India's AI trajectory and the emphasis on innovation and sustainable development, understanding how practitioners perceive AI in recruitment is crucial for designing responsible and scalable solutions that support both organisational performance and ethical employment practices.

II. RESEARCH QUESTIONS AND HYPOTHESES

Research Questions

This study was guided by three research questions.

RQ1: To what extent are AI and automation tools currently used in talent acquisition processes in Indian organisations?

RQ2: How do respondents perceive the usefulness and risks of AI-based recruitment tools

RQ3: Are there significant differences in perceptions among HR professionals, line managers, and management students?

Hypotheses

Based on the literature and national context, the following hypotheses are proposed.

H1: The perceived usefulness of AI-based recruitment tools is significantly higher than the perceived risk.

H2: There is a significant association between organisational size and the adoption of AI-based recruitment tools.

H3: The perceived usefulness of AI-based recruitment tools differs significantly among HR professionals, line managers, and management students.

IV. RESEARCH METHODOLOGY

Research Design

This study employed a quantitative, cross-sectional survey design. A structured questionnaire was used to collect data on the participants' AI adoption, perceptions, and demographic characteristics. This design is suitable for capturing snapshot perceptions and practices across diverse respondent groups.

Sample and Sampling Technique

The sample consisted of 152 respondents from Maharashtra, India. Participants were drawn from various sectors, including IT/ITES, manufacturing, services, and education. The sample includes:

- HR professionals involved in recruitment (N = 58)
- Line managers participating in hiring decisions (N = 34)
- MBA/Management students with internship exposure to recruitment processes (N = 60)

A combination of convenience and snowball sampling was used. Participation was voluntary and anonymous in nature.

Instrumentation

The questionnaire contained four sections.

Demographic and organisational profile

Age, gender, role, years of experience, industry, and organisational size.

AI adoption in talent acquisition.

Items determining whether the organisation uses AI tools in recruitment and, if so, which types (AI-enabled ATS, chatbots, automated scheduling, AI-based assessments, predictive analytics).

Perceptions of AI-based recruitment tools

Likert-scale items (1 = Strongly Disagree to 5 = Strongly Agree) measuring:

Perceived usefulness (for example, "AI tools make recruitment faster and more efficient").

Perceived risk (for example, "AI-based recruitment may unfairly reject qualified candidates").

Attitudes toward human oversight (e.g. final hiring decisions should always involve a human recruiter).").

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Behavioural intention

Items capturing the intention to adopt or continue using AI tools in future recruitment.

The questionnaire was pilot-tested with 15 respondents to ensure its clarity and reliability. Cronbach's alpha values were 0.86 for the usefulness scale and 0.79 for the risk scale, indicating an acceptable internal consistency.

IV. DATA COLLECTION AND ANALYSIS

Data were collected via Google Forms and in-person distribution over a period of four weeks. Responses were exported to a spreadsheet and analysed using statistical software.

- **Descriptive statistics** (frequencies, percentages, means, and standard deviations) were used to summarise the data.
- A **paired-samples t-test** was used to compare the mean perceived usefulness and perceived risk (H1).
- A **chi-square test of independence** was used to examine the association between organisational size (small, medium, large) and AI adoption (yes/no) (H2).
- A **one-way ANOVA**, followed by Tukey's HSD post-hoc tests, assessed differences in perceived usefulness across the three respondent groups (H3).
- The significance level was set at $p < 0.05$.

V. RESULTS

Demographic and Organisational Characteristics

The mean age of respondents was 29.4 years (SD = 6.2), with 54.6% male and 45.4% female respondents. The Organisational size distribution was as follows:

Small (< 50 employees): 24.3%

Medium (50–249 employees): 39.5%

Large (⩾ 250 employees): 36.2%

Respondents were from the IT/ITES (34.2%), manufacturing (22.4%), services (27.0%), and education/other sectors (16.4%).

Adoption of AI-Based Recruitment Tools (RQ1)

Overall, **61.8% (N = 94)** of the respondents indicated that their organisations used at least one AI-based recruitment tool.

Table 1: Types of AI Tools Used in Talent Acquisition (N = 94 users)

AI Tool Type	Count	Percentage (%)
AI-enabled ATS / resume screening	**68**	**72.3**
Chatbots for candidate queries and support	**41**	**43.6**
Automated interview scheduling and reminders	**37**	**39.4**
Online assessments with AI-assisted scoring	**29**	**30.9**
Predictive analytics for hiring decisions	**22**	**23.4**

AI-enabled ATS with automated screening has emerged as the most widely used tool, followed by chatbots and automated scheduling. This pattern is consistent with NASSCOM's broader observation that predictive analytics and AI-powered chatbots are widely adopted technologies across business functions.

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Perceived Usefulness and Perceived Risk (RQ2, H1)

Composite scores were calculated for perceived usefulness and risk.

Perceived usefulness: M = 3.94, SD = 0.64

Perceived risk: M = 3.21, SD = 0.71

A paired-samples t-test showed that perceived usefulness was significantly higher than perceived risk ($t(151) = 6.47$, $p < 0.001$), thereby supporting **H1**.

Item-wise, 79.6% of respondents agreed or strongly agreed that AI tools made recruitment faster and more efficient, and 74.3% agreed or strongly agreed that AI helped in shortlisting better-matched candidates.

Concerns about Bias, Transparency, and Human Oversight

Despite positive perceptions of usefulness, the respondents expressed notable concerns.

Moreover, 72.4% agreed or strongly agreed that AI-based recruitment may inherit bias from historical data.

Moreover, 68.4% of the respondents agreed or strongly agreed that final hiring decisions should always involve a human recruiter, even when AI tools are used.

A total of 63.8% agreed or strongly agreed that organisations should be transparent with candidates about the use of AI in recruitment.

These findings suggest a strong preference for a **human-in-the-loop** model, where AI supports but does not replace human judgement.

Organisational Size and AI Adoption (H2)

A chi-square test of independence was conducted to examine the relationship between organisational size and AI adoption in recruitment. The result was significant ($\chi^2(2, N = 152) = 11.27$, $p = 0.004$), supporting **H2**.

Large organisations showed higher adoption rates (78.2%) than medium (59.3%) and small organisations (43.2%). This aligns with NASSCOM's broader findings that larger enterprises often have more structured AI strategies, dedicated budgets, and better alignment between IT and business functions than smaller enterprises.

Group Differences in Perceived Usefulness (H3)

A one-way ANOVA was used to test for differences in perceived usefulness across HR professionals, line managers, and management students.

- HR professionals: M = 4.08, SD = 0.58
- Line managers: M = 3.89, SD = 0.63
- Management students: M = 3.82, SD = 0.68

The ANOVA result was significant, **$F(2,149) = 3.41$, $p = 0.036$**, supporting **H3**. Tukey HSD post-hoc tests indicated that HR professionals rated AI usefulness significantly higher than management students, while the difference between HR professionals and line managers was not significant.

VI. DISCUSSION

The findings confirm that AI and automation are gaining traction in talent acquisition within Indian organisations, particularly among larger enterprises, echoing the national-level trends observed by NASSCOM. AI-enabled ATS and automated screening are dominant tools, reflecting organisational priorities of efficiency and scalable handling of large applicant pools.

The significant difference between perceived usefulness and risk supports the view that stakeholders recognise the tangible operational benefits of AI in recruitment. However, strong concerns about bias, transparency, and the need for human oversight indicate that adoption is not uncritical. Respondents favoured AI as an augmenting technology rather than a replacement, seeking to balance efficiency with fairness and ethical responsibility.

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The association between organisational size and AI adoption suggests that resource availability and strategic capability play important roles in moving from exploratory to more mature stages of AI adoption, consistent with the NASSCOM maturity stages from Explorer to Evangelist classification. The higher perceived usefulness among HR professionals compared to students indicates that hands-on exposure and accountability for outcomes may positively influence attitudes toward AI-based tools in HRM.

VII. IMPLICATIONS

Implications for Practice

- Organisations should implement AI tools in talent acquisition with clearly defined objectives, such as reducing the time to hire--, improving candidate-job fit, or supporting diversity goals.
- Human oversight must be institutionalised, with recruiters reviewing AI-generated shortlists, particularly in critical or borderline cases.
- Regular audits should be performed to detect and mitigate algorithmic bias, and organisations should maintain documented AI governance frameworks in line with NASSCOM's emphasis on ethics and governance as a core dimension of AI maturity.
- Transparent communication with candidates regarding the use of AI can improve trust and candidate experience

Implications for Education and Policy

- Management and HR curricula should incorporate AI, analytics, and ethical considerations in recruitment and HR decision-making to prepare graduates for AI-rich workplaces, aligning with the conference's objective of fostering advanced research and innovation in this area.
- Policymakers and professional bodies should consider issuing guidelines on responsible AI adoption in HR, specifying expectations regarding non-discrimination, explainability, and data protection.

VIII. LIMITATIONS AND FUTURE RESEARCH

This study had several limitations. First, the use of convenience and snowball sampling may limit the generalisability of the results beyond the sampled sectors and regions. Second, the cross-sectional design captures perceptions at a single point in time; longitudinal research could examine how perceptions and adoption evolve as AI tools mature over time. Third, the study relies on self-reported perceptions rather than objective performance measures, such as the actual reduction in time-to-hire-- or improvement in the quality of hire.

Future research could include the following:

Longitudinal studies linking AI recruitment practices to organisational performance and diversity outcomes.

Comparative studies across states or countries to examine the cultural and regulatory influences on AI adoption.

Investigations into candidate perceptions and experiences with AI-based recruitment processes.

IX. CONCLUSION

AI and automation are reshaping talent acquisition in India, supported by broader digitalisation and AI maturity trends captured by the NASSCOM AI Adoption Index. This empirical study shows that most surveyed organisations have adopted at least one AI-based recruitment tool, with particularly strong uptake among larger firms. Stakeholders perceive AI as highly useful for improving efficiency and matching, yet simultaneously express significant concerns about bias and emphasise the necessity of human oversight.

These findings support a balanced, human-centric approach to AI in talent acquisition, where technology is leveraged for operational excellence while preserving ethical safeguards and human decision-making. For organisations aiming to be future-ready, the challenge is not merely to adopt AI tools but to integrate them into recruitment processes in a way that is transparent, fair, and aligned with the long-term sustainable development of human capital.

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