

HUMAN-CENTRIC AI IN RECRUITMENT: BALANCING EFFICIENCY, FAIRNESS AND SUSTAINABLE HIRING IN INDIA

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ABSTRACT

Artificial intelligence is increasingly embedded in recruitment through applicant tracking systems, resume-screening tools, candidate-ranking models, chatbots and automated assessment technologies. These systems can improve the speed, consistency and scalability of hiring, but their use also creates significant questions concerning algorithmic bias, transparency, privacy, accountability and the preservation of meaningful human judgment. This paper examines how AI can be incorporated into recruitment in India without allowing automation to displace ethical responsibility. Using a qualitative, observational and analytical research design based on a structured review of more than 100 academic publications, policy documents and industry reports, the study synthesises evidence around four dimensions: operational efficiency, fairness and bias, transparency and accountability, and sustainable workforce outcomes. The review indicates that AI should be treated primarily as a decision-support capability rather than an autonomous hiring authority. Historical data can reproduce existing inequalities; opaque decision processes can weaken candidate trust; and extensive processing of candidate information creates privacy and governance risks. Against this background, the paper proposes a human-centric AI recruitment framework comprising an AI operations core, mandatory human oversight, continuous bias and transparency controls, and governance and sustainability alignment. The framework preserves AI-enabled efficiency while assigning final accountability to qualified human decision-makers. The study argues that sustainable AI recruitment in India requires more than technological adoption: it requires institutional controls for bias testing, explainability, data protection, candidate communication, review and accountability. The proposed framework is intended to support HR professionals, organisations and policymakers seeking to develop recruitment systems that are efficient, fair, transparent and socially responsible.

Keywords: Artificial Intelligence, AI Recruitment, Human-Centric AI, Algorithmic Bias, Human Oversight, Sustainable Hiring, Ethical AI, HR Technology

1. INTRODUCTION

Artificial intelligence is reshaping recruitment by transferring an increasing number of administrative and evaluative tasks from conventional HR workflows to algorithmic systems. Applicant tracking systems, automated resume screening, candidate-ranking tools, chatbots, statistical assessment and automated interview technologies can process large applicant pools quickly and can reduce repetitive administrative work. The attraction of these systems is particularly strong in high-volume recruitment environments where speed, consistency and cost control are important organisational objectives.

However, recruitment is not merely an administrative matching exercise. Hiring decisions influence access to employment, organisational diversity, workplace culture and long-term career opportunities. When an algorithm contributes to screening, ranking or selection, its design and data can therefore affect individuals in ways that extend beyond operational efficiency. Historical recruitment data may contain patterns of unequal representation or discrimination, and an algorithm trained on those data may reproduce or amplify them.

Transparency presents a second challenge. Candidates may not know whether AI is being used, what information is being evaluated, or whether an automated recommendation has been reviewed by a human. Where the basis of a decision is difficult to understand, candidates may perceive the process as opaque or unfair. The issue is therefore not limited to technical explainability; it also concerns the relationship of trust between an employer and a prospective employee.

Data governance is a further concern. AI-enabled recruitment can involve resumes, contact details, assessment responses, interview recordings, behavioural indicators and other personal information. The Digital Personal Data Protection Act, 2023 provides an important framework for personal-data governance in India, but the source literature identifies a continuing need for clearer AI-specific accountability mechanisms in recruitment.

International regulatory developments reinforce the importance of governance. The source paper discusses the European Union's approach to employment and recruitment AI as a high-risk area requiring stronger safeguards around risk management, transparency and human oversight. These developments provide a useful benchmark for considering how Indian organisations can build responsible AI recruitment systems even while the Indian regulatory environment continues to evolve.

Against this background, this study advances the concept of human-centric or humanized AI in recruitment. The central proposition is not that organisations should reject AI. Rather, AI should be embedded within a socio-technical system in which automated tools perform appropriate operational tasks while qualified humans retain meaningful review, contextual judgment and final decision authority. This approach seeks to reconcile efficiency with fairness, transparency and sustainable workforce development.

2. MATERIAL AND METHODS

AI in recruitment

In recruitment, AI refers to computational systems that process applicant information, identify patterns and support activities such as resume screening, candidate ranking, skill matching, automated communication and assessment. These systems can process large applicant populations more rapidly than manual procedures. Their outputs, however, remain dependent on the data, features, assumptions and model design used in the system.

Human-centric AI

Human-centric AI in recruitment refers to the deliberate integration of human judgment, ethical oversight and accountability mechanisms into AI-supported hiring. It does not require the elimination of automation. Instead, AI operates as a decision-support capability while human professionals retain responsibility for contextual evaluation and final hiring decisions. Human review is particularly important where algorithmic recommendations may affect equal opportunity, candidate dignity or employment access.

Algorithmic bias

Algorithmic bias arises when an AI system produces systematically unequal outcomes because of biased training data, model design, feature selection or incomplete representation. In recruitment, historical hiring patterns can become embedded in training data. If earlier recruitment decisions favoured particular genders, educational backgrounds or socioeconomic groups, a model trained on those decisions may reproduce similar preferences.

Transparency and explainability

Transparency concerns whether candidates and organisational stakeholders can understand the role played by AI in recruitment and the basis on which outputs are generated or used. The source literature treats disclosure of AI involvement, explanation of evaluation processes and communication of human-review mechanisms as important to candidate trust. Transparency should therefore be viewed as both a technical and relational requirement.

Sustainable hiring

Sustainable hiring extends beyond immediate reductions in recruitment time or cost. It concerns the creation of a workforce and recruitment system that supports fairness, diversity, legality, trust and long-term organisational objectives. Responsible AI can contribute to sustainable hiring only when efficiency is accompanied by safeguards that protect equal opportunity, candidate rights and organisational accountability.

Efficiency and organisational value

The literature reviewed in the source manuscript consistently identifies operational efficiency as a major benefit of AI-enabled recruitment. Automated resume screening, candidate ranking and chatbot interactions can reduce manual workload, accelerate shortlisting and support high-volume recruitment. Standardised criteria can also reduce some forms of inconsistency in early-stage screening. From an organisational perspective, these capabilities can free HR professionals to concentrate on higher-level activities such as workforce planning and strategic decision-making.

Efficiency, however, should not be treated as the sole measure of recruitment quality. Candidate experience, trust, fairness and organisational reputation can also influence the long-term value of recruitment. Excessive automation may reduce meaningful interaction between candidates and employers and can create perceptions of detachment.

Justice, fairness and equal opportunity

A justice-oriented perspective evaluates both the fairness of the recruitment procedure and the fairness of its outcomes. Standardised algorithmic procedures do not automatically produce equitable outcomes. If training data reflect historical discrimination or unequal representation, automation may reproduce those patterns at scale. Consequently, fairness requires ongoing monitoring, bias testing and human review rather than simple reliance on automated consistency.

Privacy, dignity and accountability

AI recruitment systems can process substantial quantities of personal information, including resumes, assessment data, interview recordings and behavioural indicators. The literature therefore raises questions about consent, purpose limitation, data handling and candidate autonomy. A recruitment system that provides no meaningful explanation or avenue for review may also affect the dignity of candidates who are evaluated by an opaque mechanism.

Human-in-the-loop recruitment

Human-in-the-loop approaches provide a practical response to the tension between automation and accountability. Human involvement can occur at multiple stages: validating AI-generated rankings, investigating unusual or potentially discriminatory outcomes, reviewing candidates who may be

disadvantaged by standardised criteria, communicating with candidates and making the final hiring decision. The role of human oversight should be substantive rather than merely symbolic. This study will address the following research gap. First, Existing research often examines AI's efficiency benefits and ethical risks as separate discussions, limiting the development of a unified model that balances productivity with fairness and trust. Second, International AI-governance literature is more developed than context-specific research on AI recruitment within India's regulatory, organisational and socio-economic environment. Third, Although existing scholarship recognizes the importance of responsible AI and sustainable hiring, there is a need for a structured recruitment framework that specifies where human oversight, bias monitoring, transparency and governance should operate. Fourth, AI recruitment is frequently assessed in terms of operational performance, while longer-term workforce sustainability, candidate trust and equal opportunity receive comparatively less integration into the recruitment design. The study addresses these gaps by proposing a human-centric AI recruitment model that integrates technological efficiency with human judgment, bias control, transparency and governance alignment. This study has the following objectives:

- To analyse the operational contribution of AI to recruitment, particularly in relation to efficiency, speed, cost reduction and decision support.
- To examine fairness and algorithmic-bias risks associated with AI-enabled hiring.
- To examine transparency, accountability and data-governance requirements in AI recruitment, with particular attention to the Indian context.
- To formulate a human-centric AI recruitment framework that combines technological efficiency with ethical safeguards and sustainable hiring principles.

The study adopts a qualitative, observational and analytical design based on secondary research. It does not use primary interviews, surveys or experimental data. Instead, it synthesises evidence from existing academic studies, policy documents and industry reports to identify recurring patterns in AI recruitment, ethical concerns, operational outcomes and governance requirements. The source manuscript reports reviewing more than 100 research publications, policy documents and industry reports relating to AI-enabled recruitment. Priority was given to peer-reviewed literature, conference proceedings, institutional material and regulatory documents addressing AI recruitment, algorithmic bias, transparency, data protection and sustainable hiring.

The reviewed literature was organised around four analytical dimensions: (1) operational efficiency of AI recruitment systems; (2) fairness and algorithmic bias; (3) transparency and accountability;

and (4) sustainability and long-term workforce implications. These themes were then synthesised to develop the proposed human-centric recruitment framework.

Because the paper seeks to consolidate a fragmented body of research and develop a conceptual governance model, secondary qualitative synthesis is appropriate to its stated purpose. The approach provides theoretical integration and contextual interpretation without making claims of statistical generalisation from primary respondents. The literature synthesis indicates that effective AI recruitment rests on three foundational requirements: efficiency, fairness and transparency. Efficiency provides the operational rationale for AI adoption; fairness protects equal opportunity and reduces discriminatory outcomes; and transparency provides the accountability and trust necessary for candidates and organisations to understand the role of automated systems.

Taken together, the reviewed evidence suggests that an AI recruitment system should be evaluated on more than processing speed. A system that screens applicants quickly but systematically disadvantages particular groups, provides no meaningful explanation or compromises candidate trust cannot be considered sustainable.

3. DISCUSSION

The proposed framework integrates AI into recruitment as a socio-technical system. Its purpose is to preserve the operational benefits of automation while establishing explicit points at which humans, governance controls and sustainability considerations intervene.

AI operations core

The AI operations core performs appropriate high-volume tasks such as resume screening, candidate ranking, skill matching, automated communication and data analysis. Its role is to improve processing speed, reduce administrative workload and provide structured decision support.

Human supervision layer

All material AI-generated recruitment outputs should be subject to review by qualified human recruiters before final selection. Human professionals should retain authority to validate recommendations, examine contextual information and override algorithmic outputs where justified. Human oversight should be meaningful rather than a formal sign-off after an effectively predetermined automated decision.

Bias and transparency control

Organisations should periodically test recruitment systems for disproportionate rejection or selection patterns. Monitoring should cover relevant applicant groups and stages of the recruitment process. The criteria used by the AI system should be documented, and candidates should be

informed when AI contributes materially to screening or assessment. Where appropriate, organisations should provide information on review and correction mechanisms.

Governance and sustainability alignment

AI deployment should be aligned with applicable data-protection requirements, equal-opportunity principles and the organisation's long-term workforce objectives. Governance should address data handling, accountability, auditability, candidate communication and the effect of AI on diversity and hiring quality. The objective is responsible adoption rather than technology adoption for its own sake.

Table 1. Operationalising the Framework

Stage	AI contribution	Human responsibility	Sustainability safeguard
1. Job requirement	Support structured role definition and skill mapping	Validate job requirements and avoid exclusionary criteria	Equal-opportunity review
2. Application collection	Organise and process applicant data	Ensure appropriate candidate communication	Data-protection controls
3. AI screening & ranking	Screen, rank and identify matches	Review criteria and monitor anomalies	Bias testing
4. Human review	Provide ranked candidates for assessment	Apply contextual judgment and validate outputs	Explainability and accountability
5. Bias & transparency check	Generate monitoring indicators	Investigate disproportionate outcomes	Audit trail and disclosure
6. Final decision	Provide decision-support information	Make and document final hiring decision	Human accountability
7. Sustainable outcome	Support recruitment analytics	Evaluate quality, diversity and long-	Continuous monitoring

		term fit	
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10. Discussion

The evidence supports a shift from an automation-centred view of AI recruitment to a governance-centred view. AI can perform repetitive and data-intensive tasks efficiently, but recruitment decisions have consequences that cannot be reduced to prediction accuracy or processing time. The quality of a hiring system depends on the interaction among the algorithm, training data, organisational procedures, human reviewers and regulatory environment.

The first implication is that efficiency and fairness should be treated as complementary design objectives. Automated screening can reduce administrative burden, but efficiency gains should not be evaluated independently from differential outcomes. A faster recruitment process that systematically filters out qualified candidates from particular groups may create greater organisational and social costs than the administrative savings it generates.

The second implication concerns human oversight. The human role should not simply be retained because of a general preference for human involvement. It is necessary because recruiters can examine contextual information, challenge inappropriate recommendations and account for factors that are not adequately represented in historical data. Human review therefore functions as an accountability mechanism within the socio-technical system.

Third, transparency should operate throughout the candidate journey. Candidates should know when AI is materially involved, organisations should understand the criteria and limitations of their tools, and appropriate review mechanisms should exist when automated outputs are disputed. Transparency can consequently improve not only compliance but also organisational credibility and candidate trust.

Finally, the Indian context makes governance particularly important. The source manuscript identifies a developing regulatory environment in which the Digital Personal Data Protection Act, 2023 provides a general personal-data framework while AI-specific recruitment accountability remains less fully developed. Organisations therefore need internal governance practices that do not wait for every detailed regulatory requirement to be specified.

4. IMPLICATIONS

For HR professionals

- Use AI primarily for structured decision support and high-volume administrative tasks rather than delegating final hiring authority to automated systems.
- Document the purpose, data inputs and evaluation criteria of AI-enabled recruitment tools.
- Establish human-review checkpoints before consequential recruitment decisions.
- Conduct periodic bias testing and investigate unexplained differences in screening or selection outcomes.
- Maintain meaningful candidate interaction at interview, feedback and review stages.

For organisations

- Adopt a formal AI recruitment governance policy covering accountability, data handling, transparency, monitoring and escalation.
- Maintain audit trails that allow organisations to understand how AI outputs contributed to recruitment decisions.
- Evaluate recruitment technology using both operational indicators and workforce indicators such as diversity, candidate experience and quality of hiring.
- Require vendors to provide sufficient documentation regarding system functionality, limitations, data use and monitoring capabilities.

For policymakers

- Develop clearer guidance on responsible use of AI in employment and recruitment.
- Encourage independent or organisational AI-audit mechanisms for high-impact employment systems.
- Strengthen guidance on candidate notification, explanation, review and correction when automated systems materially influence decisions.
- Promote standards that align AI adoption with data protection, equal opportunity and responsible employment practices.

Table 2. Integrated Findings

Theme	Integrated finding
Efficiency	AI can accelerate screening, ranking,

	communication and processing of large applicant pools.
Fairness	Standardisation does not guarantee fairness; historical data and model design can reproduce unequal patterns.
Transparency	Candidates and organisations need meaningful information about AI involvement and review mechanisms.
Human oversight	Final hiring authority should remain with qualified human professionals who can apply contextual judgment.
Data protection	AI recruitment requires careful handling of personal data and appropriate governance controls.
Sustainability	Long-term hiring quality requires balancing operational performance with fairness, diversity, trust and legal responsibility.
Indian context	The developing Indian governance environment increases the importance of internal organisational controls and accountable implementation.

5. CONCLUSION

AI is likely to remain an important component of recruitment because it can process large applicant pools, accelerate screening and reduce routine administrative work. The evidence reviewed in this study nevertheless demonstrates that operational efficiency alone is an inadequate basis for evaluating AI-enabled hiring. Recruitment systems influence access to employment and therefore require stronger attention to fairness, transparency, privacy and accountability.

The proposed human-centric AI recruitment framework responds to this challenge by positioning AI as a decision-support capability within a broader socio-technical governance structure. Its four core elements AI operations, human supervision, bias and transparency control, and governance and sustainability alignment are designed to ensure that automation does not displace responsibility.

For India, this approach is particularly relevant because AI adoption is advancing while the regulatory and institutional architecture surrounding AI-specific employment decisions continues to develop. Organisations can therefore strengthen responsible practice by implementing internal safeguards that make AI use transparent, auditable and subject to meaningful human review.

Sustainable recruitment should ultimately be understood not as the fastest possible hiring process, but as a process capable of combining efficiency with equal opportunity, candidate trust, lawful data use and long-term workforce quality. Humanising AI does not mean resisting technological progress; it means designing technological progress so that efficiency remains accountable to human judgment and organisational responsibility.

6. FUTURE RESEARCH AND LIMITATIONS

The study is based entirely on secondary literature, policy documents and industry reports and therefore does not provide primary empirical evidence from Indian candidates, HR professionals or organisations. The qualitative synthesis is intended to identify themes and develop a conceptual framework rather than estimate causal effects or statistical relationships. The proposed framework also requires empirical validation across sectors, organisation sizes and recruitment technologies before its effectiveness can be generalised. In addition, regulatory references should be interpreted according to the legal status and implementation of the relevant instruments at the time of application; therefore, the paper's contribution is primarily conceptual and governance-oriented. Future research should empirically test whether human review reduces discriminatory outcomes in AI screening, compare candidate perceptions of automated, human-in-the-loop and conventional recruitment, develop sector-specific audit metrics for AI recruitment systems, examine data-protection and candidate-consent practices in Indian organisations, and investigate the effects of AI recruitment on diversity and inclusion across gender, socioeconomic background, education and geographic location.

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