

## ARTIFICIAL INTELLIGENCE IN CANDIDATE SCREENING: OPPORTUNITIES AND CHALLENGES

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**Purpose:** This paper explores how artificial intelligence (AI) supports candidate screening and identifies key challenges organizations face when adopting AI-based recruitment tools. The aim is to provide a critical synthesis of recent peer-reviewed research and conference literature to inform theory and practice.

**Design/methodology/approach:** The study is based on a structured review of selected academic articles and conference papers published in recent years. It uses thematic analysis to evaluate the benefits and limitations of AI in recruitment, focusing specifically on the screening phase. The paper adopts a socio-technical lens, addressing technological, organizational, ethical, and legal aspects of AI implementation.

**Findings:** AI significantly enhances candidate screening by automating repetitive tasks, increasing efficiency, and enabling data-driven, objective assessments. Key benefits include improved scalability, predictive accuracy, and reduced bias—when implemented carefully. However, challenges persist. These include algorithmic bias, opacity in decision-making, data privacy concerns, regulatory uncertainty, and resistance from HR professionals and candidates. The study underscores the need for transparent AI systems, ethical design principles, and human oversight to ensure trust and fairness.

**Research limitations/implications:** The findings offer guidance for HR practitioners and AI developers. Organizations should foster interdisciplinary collaboration, invest in training, and ensure algorithmic transparency. Responsible implementation and continuous evaluation are key to maximizing benefits while minimizing risks.

**Practical implications:** This study provides actionable insights for HR practitioners and technology developers. It emphasizes the importance of interdisciplinary collaboration, responsible algorithm design, and transparency to ensure successful and ethical AI integration. Organizations are advised to invest in data literacy, cross-functional AI governance, and continuous system evaluation to maximize benefits while mitigating risks.

**Originality/value:** This paper contributes to the literature on AI in human resource management by synthesizing recent findings into a framework of benefits and barriers in candidate screening. It provides theoretical and practical insights for researchers, practitioners, and developers working at the intersection of HR and AI.

**Keywords:** Artificial Intelligence, Candidate Screening, Algorithmic Bias, Recruitment Technology.

**Category of the paper:** literature review.

## 1. Introduction

A well-structured recruitment process is a cornerstone of effective organizational functioning, playing a critical role in aligning human capital with strategic goals. Recruitment is not merely a transactional activity but a continuous and strategic function that ensures the organization attracts, selects, and retains individuals with the right competencies to meet both current and future demands (Vedapradha et al., 2023). It encompasses activities such as sourcing, tracking, evaluating, and onboarding candidates, all of which contribute to reduced hiring risks, cost savings, and enhanced productivity. Fundamentally, recruitment serves as a primary mechanism for acquiring human capital, thereby influencing the long-term success and sustainability of organizations. However, traditional recruitment methods, reliant on human judgment and interpersonal interactions, face numerous limitations in today's rapidly evolving labor market. Manual resume screening is time-consuming and prone to human error, while interviews may be subject to unconscious bias and inefficiency (Rukadikar et al., 2025). The global competition for a limited pool of highly qualified professionals further intensifies these challenges. In addition, traditional processes often struggle with ensuring fairness and inclusivity, which are increasingly vital in diverse, globalized work environments. To address these limitations, artificial intelligence (AI) is emerging as a transformative force in recruitment. Recent advancements in AI and machine learning technologies have enabled automation of repetitive tasks such as resume screening, candidate sourcing, and interview scheduling, thereby enhancing process efficiency and speed (Rukadikar et al., 2025). AI can reduce biases in candidate selection by using objective, data-driven evaluations and can significantly enhance candidate engagement through tools such as chatbots and personalized job matching systems (Koman et al., 2024; Upadhyay, Khandelwal, 2018). These innovations allow recruiters to move beyond administrative tasks and focus on more strategic roles, such as talent development and employer branding. Despite growing academic and practical interest in the use of AI in recruitment, existing studies tend to adopt a broad or technical focus, often treating recruitment as a single, undifferentiated process or concentrating on isolated aspects such as algorithmic fairness (Köchling et al., 2023; Ore, Sposato, 2022). However, the candidate screening phase—where most applicants are eliminated—has received comparatively limited attention as a distinct, high-impact stage of recruitment (Lavanchy et al., 2023; Tursunbayeva et al., 2025). Moreover, few reviews synthesize findings across the technological, organizational, ethical, and legal dimensions in an integrated, socio-technical perspective. This article addresses these gaps by focusing specifically on the application of AI in the candidate screening phase, which is a critical decision point in talent acquisition. It synthesizes findings from recent peer-reviewed studies to assess both the benefits (e.g. efficiency, bias reduction, candidate experience) and challenges (e.g. transparency, data quality, resistance to adoption) of AI implementation.

In response to the identified research gaps, the article is guided by the following research questions:

- RQ1: What AI technologies and tools are currently used in the candidate screening stage, and for what purposes?
- RQ2: What are the reported benefits and limitations of AI-enhanced candidate screening, particularly in terms of technological, organizational, ethical, and legal factors?
- RQ3: What socio-technical conditions influence the successful adoption of AI-based screening solutions?

The structure of the article has been designed to systematically present the topic of artificial intelligence in candidate screening. Section 2 offers an overview of the key AI functionalities applied during the screening stage, highlighting various tools and their primary purposes. Section 3 focuses on analyzing how AI supports the practical implementation of candidate screening, with particular attention to efficiency, objectivity, and candidate experience. Section 4 explores the main challenges associated with AI adoption, including technical, organizational, ethical, and legal barriers. Finally, Section 5 presents a summary of the main findings, discusses the theoretical and practical implications of the literature review, and outlines recommendations for future research.

This study is based on a structured literature review aimed at synthesizing recent academic findings on the use of artificial intelligence in candidate screening. The methodological approach follows established principles for evidence-based review studies, combining systematic article selection with thematic content analysis to address the research questions.

Academic databases such as Scopus, Web of Science, and Google Scholar were used to identify relevant peer-reviewed journal articles and conference proceedings published primarily between 2018 and 2025. The search was conducted using combinations of keywords including: *AI recruitment*, *candidate screening*, *algorithmic bias in hiring*, *HR technology*, and *socio-technical systems*. Studies were included if they addressed the use of AI specifically in the candidate screening stage and offered conceptual, empirical, or practical insights. Sources lacking methodological transparency, relevance to screening, or academic credibility were excluded.

The final sample included 38 peer-reviewed publications, which were subjected to thematic analysis. This analytical approach enabled the identification of recurring patterns, benefits, and concerns presented in the literature. To guide the synthesis, the study adopted a socio-technical perspective, grouping insights into four interconnected dimensions: technological, organizational, ethical, and legal.

This combination of structured review and thematic coding allowed for a comprehensive and critically informed synthesis. The methodology is particularly appropriate for emerging, interdisciplinary fields such as AI in recruitment, where empirical findings are diverse and often fragmented.

## 2. Artificial Intelligence in Candidate Screening

As AI becomes increasingly embedded in recruitment processes, a central focus of scholarly inquiry has been the identification of AI features that most significantly influence the candidate screening stage of talent acquisition. Candidate screening—the process of assessing, filtering, and shortlisting applicants—is particularly amenable to technological augmentation due to its typically high volume and repetitive nature (Patrick Oputa Odili et al., 2024; Thakur, Sharma, 2020). In this context, AI technologies have brought notable advancements by automating routine tasks, enhancing the accuracy of data analysis, and enabling more sophisticated assessments of candidate suitability. The literature consistently highlights several AI capabilities that are reshaping how organizations identify and evaluate talent. Among the most foundational is automated resume parsing and analysis, which allows AI systems to extract relevant information from documents in various formats (e.g., PDF, DOC, RTF) and efficiently compare applicant qualifications against job requirements (Horodyski, 2023b; Ore, Sposato, 2022). Machine learning algorithms further augment this process by recognizing patterns in historical recruitment data to predict candidate success, thereby improving the precision of shortlisting and alleviating recruiter workload (Jatoba et al., 2019; Tanantong, Wongras, 2024; Tsiskaridze et al., 2023). Natural language processing (NLP) and semantic matching tools have also emerged as pivotal. Unlike traditional keyword matching, these systems interpret contextual meaning and intent, resulting in more accurate alignment between candidate language and job description requirements (Lavanchy et al., 2023; Patrick Oputa Odili et al., 2024). Closely related are predictive analytics tools, which forecast candidate performance and organizational fit by analyzing a combination of variables, including prior experiences, qualifications, and communication patterns (Lee et al., 2021; Rider et al., 2019). Another prominent category involves AI-enabled video interview technologies that incorporate facial recognition, voice pattern analysis, and the interpretation of non-verbal cues. These features provide deeper insights into a candidate's confidence, communication style, and emotional tone (Mat Saad et al., 2022; Wang, 2024). In parallel, many organizations employ AI tools for personality and emotional intelligence assessments, drawing on psychometric frameworks and sentiment analysis to evaluate cultural and interpersonal fit (Hemachandran et al., 2024; Koman et al., 2024; Soleimani et al., 2022). AI-powered candidate engagement tools—such as chatbots—are also gaining popularity. These systems facilitate real-time communication, deliver instant feedback, and automate scheduling, thereby improving the overall candidate experience and enhancing process efficiency and transparency (Albassam, 2023; Upadhyay, Khandelwal, 2018). Additionally, the analysis of social media activity and broader digital footprints has been identified as an emerging method for gaining insights into candidates' behavioral tendencies, personality traits, and value orientations (Borisova et al., 2020; Năstase et al., 2024; Rigotti, Fosch-Villaronga, 2024). While much of the academic discourse has

centered on the technical performance of AI tools, recent studies have increasingly addressed issues of fairness, transparency, and candidate perceptions. Lavanchy et al. (2023) and Tursunbayeva et al. (2025) suggest that candidates are more likely to accept AI-based evaluations when the systems are transparent and appear capable of recognizing individual traits such as motivation, charisma, and ethical orientation. Conversely, concerns about "algorithmic opacity" and emotional detachment—particularly in asynchronous video interviews—have been associated with decreased engagement and a perceived lack of personalization (Köchling et al., 2023). In sum, the AI features with the greatest influence on candidate screening can be broadly categorized into automated resume analysis, semantic matching and NLP, predictive analytics, video-based behavioral assessment, emotional and psychometric evaluation, digital footprint analysis, and real-time candidate interaction. The table 1 synthesizes these features, organizes them by function, and references the relevant literature to provide a comprehensive overview of the current landscape of AI-enhanced candidate screening.

**Table 1.***Functional Categorization of AI-Enhanced Candidate Screening Features*

AI Feature	Feature explanation	Cited Authors	Category	Detailed category
Automated resume screening	Automates the evaluation of large volumes of resumes by identifying relevant skills, qualifications, and experience, reducing time-to-hire and increasing objectivity.	(Choudhuri et al., 2024; Horodyski, 2023b; Johnson et al., 2020a; Koman et al., 2024; Lawande, 2024; Ore, Sposato, 2022; Patrick Oputa Odili et al., 2024; Rider et al., 2019; Tanantong, Wongras, 2024; Thakur, Sharma, 2020; Upadhyay, Khandelwal, 2018)	Technical	Operational Automation
AI-powered chatbots and candidate engagement tools	Engages with candidates in real-time, automating initial queries, scheduling, and updates, which streamlines early interactions and improves candidate experience.	(Albassam, 2023; Borisova et al., 2020; Hemachandran et al., 2024; Johnson et al., 2020a; Lawande, 2024)	Technical	Candidate Interaction & Experience
NLP and semantic matching	Enhances resume and job description matching by understanding the context and semantics of text, allowing for more accurate candidate-job fit assessment.	(Horodyski, 2023b; Lavanchy et al., 2023; Lee et al., 2021; Patrick Oputa Odili et al., 2024; Tanantong, Wongras, 2024);	Technical	Advanced Analytics & Prediction
ML and predictive analytics	Learns from historical hiring data to predict candidate success, prioritize applications, and improve decision-making over time.	(Jatoba et al., 2019; Nyathani, 2022; Patrick Oputa Odili et al., 2024; Rukadikar et al., 2025; Tanantong, Wongras, 2024; Thakur, Sharma, 2020)	Technical	Advanced Analytics & Prediction

Cont. table 1.

Video interview analysis (facial recognition, voice/tone analysis)	Analyzes facial expressions, tone, and body language in video interviews to assess personality traits, communication skills, and emotional cues.	(Köchling et al., 2023; Lavanchy et al., 2023; Mat Saad et al., 2022; Soleimani et al., 2022; Wang, 2024)	Technical	Advanced Analytics & Prediction
Social media and digital footprint analysis	Analyzes social media and online behavior to evaluate personality, values, and potential red flags, contributing to a more holistic candidate profile.	(Borisova et al., 2020; Koman et al., 2024; Năstase et al., 2024; Rigotti, Fosch-Villaronga, 2024)	Technical	Advanced Analytics & Prediction
Candidate ranking and scoring systems	Ranks and scores candidates based on predefined criteria or AI-generated models, enabling faster and more consistent shortlisting of suitable candidates.	(Blumen, Cepellos, 2023; Koman et al., 2024; Yadav, Kapoor, 2024)	Technical	Operational Automation
Behavioral and psychological assessment	Assesses soft skills, motivation, and psychological traits to better determine a candidate's fit with company culture and team dynamics.	(Bazrkar et al., 2024; Choudhuri et al., 2024; Koman et al., 2024; Lavanchy et al., 2023; Soleimani et al., 2022)	Perceptual/ Fairness-Oriented	Advanced Analytics & Prediction
Fairness, transparency, and bias mitigation	Improves fairness and transparency in decision-making by reducing human bias, enhancing explainability, and increasing trust in AI tools.	(Johnson et al., 2020a; Lavanchy et al., 2023; Tanantong, Wongras, 2024; Tsiskaridze et al., 2023; Tursunbayeva et al., 2025)	Perceptual/ Fairness-Oriented	Ethics, Fairness & Perception

Source: Own elaboration.

In the academic literature concerning the use of artificial intelligence in candidate screening, four main categories of AI functionalities can be identified: operational automation, advanced analytics and prediction, candidate interaction and experience, and ethics, fairness, and perception (Koman et al., 2024; Lavanchy et al., 2023; Tursunbayeva et al., 2025). Among these, scholars have predominantly focused on technical features—specifically those related to operational automation and predictive analytics. The prominence of technical functionalities in the research stems from several key factors. Firstly, these features address the most pressing challenges faced by modern HR departments, such as processing large volumes of applications, reducing screening time, and improving overall recruitment efficiency (Thakur, Sharma, 2020). Automating administrative tasks like initial CV screening significantly reduces both time and cost (Ore, Sposato, 2022). Additionally, technical tools are highly measurable, allowing their effectiveness to be assessed using specific performance indicators such as time-to-hire, quality of hire, and cost-per-hire (Johnson et al., 2020a; Patrick Oputa Odili et al., 2024). Notably, these functions have become the most widely adopted in practice, as they are frequently integrated into Applicant Tracking Systems (ATS) and HR technology platforms, making their implementation both scalable and accessible (Lawande, 2024; Tanantong, Wongras, 2024). Within the detailed category of operational automation, AI tools facilitate mass filtering and classification of candidates based on CV content, assign rankings based on job-fit criteria,

and administer pre-screening questionnaires. Studies by Thakur and Sharma (2020), Ore and Sposato (Ore, Sposato, 2022), and Johnson et al. (2020a) demonstrate that such features significantly expedite application review and enhance shortlisting efficiency. In turn, the detailed category of advanced analytics and prediction encompasses technologies such as NLP, which enables semantic matching of resumes and job descriptions, and machine learning algorithms that predict candidate performance based on historical data (Jatoba et al., 2019; Lee et al., 2021; Patrick Oputa Odili et al., 2024). This detailed category also includes video interview analysis—such as facial expression, vocal tone, and body language recognition—as well as psychometric testing and personality assessments, which offer deeper insights into a candidate's suitability for a specific role and team culture (Koman et al., 2024; Lavanchy et al., 2023; Wang, 2024). In sum, technical features dominate academic and practical discourse not only due to their utility and measurability but also because they represent the most technologically advanced and commercially developed tools in recruitment. However, there is growing scholarly interest in the ethical dimension, particularly issues related to algorithmic transparency, bias mitigation, and building trust in AI systems (Köchling et al., 2023; Tursunbayeva et al., 2025). As automation and data-driven analytics become standard practice, aspects related to fairness, transparency, and candidate perception are likely to gain increasing relevance in the evaluation and design of AI recruitment solutions.

### **3. How AI Supports the Candidate Screening Process**

AI is profoundly transforming the candidate screening process by enhancing efficiency, objectivity, and the quality of recruitment outcomes. As hiring environments grow increasingly data-driven and high-volume, AI tools have emerged as essential technologies for identifying the most suitable applicants in a timely, scalable, and consistent manner (Kot et al., 2021; Pratap Singh Rathore, 2023). At the core of AI-driven screening is automation, which enables the rapid analysis of large volumes of resumes, cover letters, and online profiles. AI systems can efficiently filter candidates based on predefined criteria, identifying those who align with role-specific requirements and eliminating unqualified applications—reportedly up to 75% in some cases (Ore, Sposato, 2022; Tsiskaridze et al., 2023). This significantly reduces the manual workload of recruiters while accelerating time-to-hire metrics (Nyathani, 2022; Tursunbayeva et al., 2025). AI's use of NLP and semantic matching allows for contextual interpretation of candidate resumes, moving beyond basic keyword detection to recognize synonyms, intent, and relevance (Bevara et al., 2025; Lavanchy et al., 2023). This improves alignment between job descriptions and candidate profiles, particularly for diverse or non-standard experiences (Horodyski, 2023b; Patrick Oputa Odili et al., 2024). Moreover, AI systems apply ML algorithms and predictive analytics to draw insights from historical hiring data. These tools

identify patterns associated with successful hires, enabling recruiters to forecast candidate potential and job performance more accurately (Jatoba et al., 2019; Johnson et al., 2020b; Tanantong, Wongras, 2024). Platforms like Pomato and Textkernel further optimize candidate ranking by scoring applicants based on job fit (Blumen, Cepellos, 2023; Choudhuri et al., 2024). Beyond structured resume data, AI also incorporates unstructured and behavioral information into screening. Video interview analysis, powered by facial recognition, speech analysis, and body language detection, provides insight into emotional intelligence, communication skills, and cultural fit (Choudhuri et al., 2024; Mat Saad et al., 2022; Wang, 2024). Additionally, AI tools can assess personality traits, motivation, and soft skills using psychometric assessments and sentiment analysis (Hemachandran et al., 2024; Koman et al., 2024; Soleimani et al., 2022). A growing trend involves the use of digital footprint and social media analysis to assess candidates' behavior, values, and online communication styles. These insights offer a more holistic evaluation of applicants, contributing to a more informed and comprehensive selection process (Borisova et al., 2020; Năstase et al., 2024; Rigotti, Fosch-Villaronga, 2024). Importantly, AI supports bias reduction and fairness in candidate screening. By applying standardized criteria and removing subjective human judgments, well-designed AI systems can help mitigate unconscious discrimination related to gender, age, ethnicity, or other personal characteristics (Köchling et al., 2023; Lavanchy et al., 2023). De-gendered resume parsing and anonymized assessments contribute to more equitable hiring practices (Bevara et al., 2025). AI also enhances candidate engagement through real-time, personalized communication. Chatbots and virtual assistants like Arya, Mya, Olivia, and Pomato streamline interactions by scheduling interviews, answering queries, and updating applicants on their status—often within 24 hours (Thakur, Sharma, 2020; Upadhyay, Khandelwal, 2018). This improves transparency, reduces frustration, and increases candidate satisfaction (Rukadikar, Khandelwal, 2024). Finally, AI systems are adaptive and self-improving. Through continuous learning, these tools refine their algorithms based on feedback and new data, enabling evolving alignment with job market trends and organizational needs (Lawande, 2024; Lee et al., 2021). Advanced techniques such as neural networks, fuzzy logic, and genetic algorithms further support nuanced decision-making and predictive modeling (Jatoba et al., 2019). Despite the many benefits, ethical concerns remain. Research emphasizes the importance of transparency, explainability, and candidate awareness regarding AI use in screening. Ensuring candidates understand how their data is processed and evaluated is essential to maintaining trust and compliance (Lavanchy et al., 2023; Yadav, Kapoor, 2024). AI enhances the candidate screening process through automation, precision, objectivity, and personalization. It streamlines resume filtering, incorporates behavioral and psychometric data, supports bias mitigation, and improves communication and engagement. While challenges persist, particularly around transparency and fairness, AI is increasingly central to achieving faster, fairer, and more accurate hiring decisions.

#### 4. Challenges in Adopting AI for Candidate Screening

While artificial intelligence (AI) offers considerable advantages in recruitment—such as improved efficiency, scalability, and objectivity—its adoption in candidate screening presents organizations with a broad range of complex and interrelated challenges. These include ethical, technical, organizational, and perceptual obstacles that must be addressed for AI implementation to be effective, fair, and trustworthy. One of the most frequently cited concerns relates to algorithmic bias and fairness. AI systems often learn from historical data, which may contain embedded societal or organizational prejudices. If not properly audited and managed, these biases can be replicated or even amplified by AI, leading to discriminatory hiring outcomes based on gender, race, or age (Choudhuri et al., 2024; Soleimani et al., 2022; Tsiskaridze et al., 2023). High-profile cases, such as Amazon's discontinued AI tool that discriminated against female applicants, have heightened awareness of these risks (Horodyski, 2023a). Developing bias-free algorithms is both technically challenging and resource-intensive, requiring close collaboration between HR professionals and AI developers (Koman et al., 2024; Soleimani et al., 2022).

Closely tied to bias is the issue of transparency and explainability. Many AI models operate as "black boxes," offering little insight into how decisions are made, which undermines both candidate trust and organizational accountability (Köchling et al., 2023; Lavanchy et al., 2023; Patrick Oputa Odili et al., 2024). Lack of clarity can also raise legal concerns under regulations such as the EU's GDPR, which grants individuals the right to understand automated decisions affecting them (Rigotti, Fosch-Villaronga, 2024; Tursunbayeva et al., 2025).

Data quality and privacy present another layer of difficulty. Effective AI models require large, diverse, and high-quality datasets to function accurately, yet organizations often struggle with incomplete or biased data sources (Borisova et al., 2020; Lee et al., 2021). Moreover, candidate data often includes sensitive personal information, raising concerns about consent, data protection, and cybersecurity risks (Lawande, 2024; Năstase et al., 2024; Nyathani, 2022).

Technical and infrastructural barriers also complicate AI adoption. Many firms, particularly small and medium-sized enterprises, lack the internal expertise and technological capacity to develop, integrate, and maintain sophisticated AI systems (Albert, 2019; Bazrkar et al., 2024; Bevara et al., 2025). Additionally, integrating AI tools with existing HR platforms and workflows requires significant investment, interoperability solutions, and ongoing updates to remain effective (Jatoba et al., 2019; Yadav, Kapoor, 2024).

From an organizational perspective, resistance to change remains a persistent obstacle. HR professionals may perceive AI as a threat to their roles, fearing automation will diminish their decision-making authority or lead to job loss (Köchling et al., 2023; Koman et al., 2024; Thakur, Sharma, 2020). Furthermore, many recruiters lack the training to effectively use and interpret AI tools, leading to underutilization or misuse (Hemachandran et al., 2024; Pratap

Singh Rathore, 2023). This highlights the need for investment not only in technology, but also in skill development and organizational change management.

Candidate perceptions and experiences further shape the success of AI adoption. Applicants may view AI-driven processes as impersonal, unfair, or incapable of recognizing human nuance, especially in evaluating soft skills, motivation, or personality (Johnson et al., 2020b; Lavanchy et al., 2023; Wang, 2024). This can negatively impact employer branding and reduce the attractiveness of organizations using AI, particularly when feedback is absent or unclear (Blumen, Cepellos, 2023; Upadhyay, Khandelwal, 2018).

Regulatory and legal compliance is another pressing concern. Across jurisdictions, organizations must ensure adherence to evolving laws governing discrimination, privacy, and automated decision-making (Tsiskaridze et al., 2023; Tursunbayeva et al., 2025). Non-compliance not only carries legal risk, but may also erode public and employee trust.

Finally, cost and resource constraints cannot be overlooked. Implementing AI systems involves substantial financial investment in tools, infrastructure, cybersecurity, training, and ongoing evaluation (Tanantong, Wongras, 2024; Yadav, Kapoor, 2024). These costs may disadvantage smaller firms or those with limited digital maturity, contributing to disparities in access to AI-based hiring advantages (Rigotti, Fosch-Villaronga, 2024).

In sum, while AI holds significant promise for transforming candidate screening, its successful implementation depends on addressing a constellation of challenges. These include mitigating algorithmic bias, ensuring transparency and fairness, protecting data privacy, fostering organizational readiness, securing stakeholder trust, and complying with legal frameworks. Strategic planning, interdisciplinary collaboration, ethical oversight, and continuous evaluation are essential for organizations seeking to responsibly and effectively integrate AI into their hiring practices.

## 5. Discussion and Conclusion

This article has provided a critical synthesis of 38 peer-reviewed publications examining the use of artificial intelligence (AI) in candidate screening. The thematic analysis was informed by patterns and categories identified across the literature and structured according to a socio-technical lens. This analytical framework revealed four interrelated dimensions—technological efficiency, organisational integration, ethical–legal compliance, and candidate perception—that collectively address the research questions formulated at the outset of this study.

In response to **RQ1**, the review indicates that the most frequently applied AI tools in screening include automated résumé parsing, semantic-matching algorithms based on natural language processing (NLP), ranking systems, and predictive analytics powered by machine learning (Jatoba et al., 2019; Ore, Sposato, 2022; Tanantong, Wongras, 2024).

These technologies primarily serve goals of improving **efficiency** and **scalability**, while also enabling greater **objectivity** through standardized criteria (Johnson et al., 2020b; Soleimani et al., 2022). Additional tools—such as video interview analysis or psychometric chatbots—support deeper assessment of communication style, motivation, and cultural fit (Koman et al., 2024; Mat Saad et al., 2022).

In addressing **RQ2**, the literature highlights both the advantages and limitations of AI in screening. From an efficiency standpoint, many studies report significant reductions in recruitment time and operational cost, though this is often contingent upon data quality and system integration (Lee et al., 2021; Rukadikar et al., 2025). Regarding objectivity, several sources confirm AI's potential to reduce unconscious bias—for instance, by masking demographic attributes during parsing—but also warn that bias can be amplified when algorithms are trained on historically prejudiced datasets (Bevara et al., 2025; Lavanchy et al., 2023). Transparency remains a critical concern, as many AI models function as “black boxes” and fail to meet standards of explainability under regulations like the GDPR (Rigotti, Fosch-Villaronga, 2024). While explainable AI (XAI) is gaining scholarly attention, its practical implementation is still limited (Köchling et al., 2023). In terms of candidate experience, studies show that chatbots and automated systems improve responsiveness and perceived fairness when feedback is clear and timely—but may reduce candidate satisfaction if over-automation creates a sense of impersonality (Blumen, Cepellos, 2023; Wang, 2024).

In response to **RQ3**, the findings suggest that successful implementation of AI in screening requires four socio-technical conditions: robust data governance (Borisova et al., 2020), adequate IT infrastructure and interoperability with existing HR systems (Lawande, 2024), the upskilling of HR teams and proactive change management (Köchling et al., 2023), and stakeholder trust built on transparency and ethical oversight (Tursunbayeva et al., 2025). Studies reporting positive outcomes consistently meet these conditions (Koman et al., 2024), whereas those lacking one or more factors often encounter adoption failure or organisational resistance (Horodyski, 2023a).

Theoretically, this review reinforces the relevance of the socio-technical systems perspective by showing that technological performance alone is insufficient to ensure success. The implementation of AI tools is conditioned by organisational structures, professional norms, stakeholder values, and external regulations. From a practical perspective, the results support a “responsible automation” approach, in which algorithmic tools are introduced alongside human oversight, transparent communication, and continuous performance monitoring. HR professionals are advised to invest not only in software but also in data literacy, interdisciplinary collaboration, and ethical design.

Importantly, the reviewed literature also reveals certain limitations that affect the generalisability of current knowledge. A number of studies are conceptual or exploratory in nature, lacking empirical validation. There is a noticeable shortage of longitudinal research or cross-industry comparisons. Moreover, this article's own scope is limited to English-language

academic publications, meaning that insights from grey literature, industry reports, or non-English sources were excluded. Future research should address these gaps by conducting in-depth case studies across different sectors and regulatory environments, focusing especially on long-term outcomes related to fairness, diversity, and trust in AI-based recruitment systems.

In conclusion, AI offers meaningful value in candidate screening by improving efficiency, consistency, and responsiveness. However, its successful and ethical integration into recruitment processes requires a complex interplay of technological reliability, organisational readiness, stakeholder engagement, and legal compliance. This review not only synthesises existing knowledge but also uncovers critical tensions and underexplored areas. The key contribution of this article lies in positioning AI screening as a multidimensional, socio-technical phenomenon—one that is not simply a tool, but a structuring force in how recruitment decisions are made, justified, and experienced. The findings may serve as a foundation for future theoretical development as well as for evidence-based, ethical, and scalable AI implementation in practice.

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