Optimizing Recruitment Processes Through Emerging Technologies: A Study on the Impact of Artificial Intelligence in Candidate Selection

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Abstract

This article examines the impact of artificial intelligence (AI) on recruitment and personnel selection processes, focusing both on the advantages provided and the challenges raised by this emerging technology. The study combines a review of the specialized literature with applied research conducted on a sample of 150 professionally active respondents from the Bucharest–Ilfov region, offering an integrated perspective on how AI is perceived and used in practice. The findings highlight AI's contribution to streamlining selection stages, reducing costs, and increasing the objectivity of hiring decisions.

Nevertheless, the data indicate that the implementation of AI is not without difficulties, being associated with risks related to algorithmic bias, data protection, and organizational resistance to change. The originality of the study lies in exploring the relationship between social perceptions of AI use and the actual level of organizational adoption, as well as in formulating practical recommendations for the ethical and responsible use of these technologies. The conclusions emphasize the necessity of balancing digital analysis with the human factor in recruitment.

Keywords: *artificial intelligence, recruitment, human resources, emerging technology, ethics, selection algorithms, HR digitalization, algorithmic bias.*

JEL classification: J24, M12, O33

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1. Introduction

The labor market of the 21st century is undergoing an intense process of transformation, driven by factors such as globalization, digitalization, and the accelerated pace of technological progress. These changes not only influence the structure of the economy and the way activities are organized but also profoundly affect labor relations, the configuration of professions, and strategies for managing human capital. Whereas recruitment previously relied on direct interactions, face-to-face interviews, and selections carried out exclusively by HR specialists, today we are witnessing a major reconfiguration of this process through the integration of increasingly extensive digital solutions.

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Emerging technologies and artificial intelligence (AI) have begun to profoundly influence the stages of candidate identification, evaluation, and selection. AI-assisted recruitment algorithms can process vast amounts of data in a very short time, significantly reduce the costs associated with hiring, and help mitigate unconscious biases that may arise in human evaluations (Mujtaba & Mahapatra, 2024; Rigotti & Fosch-Villaronga, 2024; Chen, 2023). As a result, traditional recruitment methods are increasingly being complemented—or even replaced—by digital tools capable of enhancing both the candidate experience and the internal processes of organizations.

However, these advances come with considerable challenges. The use of AI in recruitment raises critical questions regarding algorithmic transparency, the protection of personal data, and the assurance of fairness in decision-making. In the absence of clear regulations and proper oversight, there is a risk of new forms of discrimination, the amplification of informational asymmetries, and a diminishing role for the human factor in strategic decision-making.

In this context, a careful analysis of how artificial intelligence influences recruitment processes and the ethical implications it generates becomes not only relevant but essential. The original contribution of this study lies in the way it connects labor market actors' perceptions of AI use with the actual level of organizational adoption—an aspect still underexplored in the specialized literature. The article adds value both at the theoretical level, by integrating the latest debates on algorithmic bias and decision-making transparency into an applied framework, and at the practical level, by formulating operational recommendations for the responsible use of AI in human resources.

The study addresses an under-researched area in which most existing works focus either on the technical performance of algorithms or on their ethical implications but rarely correlate these dimensions with the real experiences of users. To support this endeavor, the article is structured to include a literature review, a presentation of the methodology employed, the presentation of results, and the analysis of identified implications, concluding with final remarks and suggestions for future research.

2. Research Questions and Objectives

This article aims to investigate how artificial intelligence (AI) influences and optimizes the recruitment process in modern organizations. It addresses essential questions such as: To what extent does AI contribute to the efficiency of selection processes? What are the actual advantages it provides? What risks may arise from the use of this technology? And how prepared are organizations to integrate such solutions into their internal processes?

The research objectives are closely linked to these questions and are grounded in the reviewed literature:

- Assessing the efficiency of AI-based tools – justified by studies that have demonstrated reductions in recruitment time and costs through automation (El Ouakili, 2025; Marr, 2020).
- Identifying the potential of AI to reduce decision-making bias – based on the contributions of Mujtaba and Mahapatra (2024) and Rigotti and Fosch-Villaronga (2024), as well as Fabris et al. (2023), who warn about the risk of reproducing existing forms of discrimination.
- Highlighting the main challenges associated with AI use – supported by the literature on algorithmic transparency and data protection (Chen, 2023; Schellmann, 2024).
- Formulating recommendations for the ethical and effective implementation of AI in HR – aligned with recent calls in the literature for the development of hybrid models that combine algorithmic analysis with human evaluation (Kaplan & Haenlein, 2020; Burduș et al., 2019).

Research hypotheses

- H1: The use of artificial intelligence contributes to reducing the time and costs associated with the recruitment process.
  This hypothesis is supported by research showing that AI can automate CV screening, interview scheduling, and initial assessments, thereby significantly reducing the resources involved (El Ouakili, 2025; Marr, 2020).
- H2: Artificial intelligence enhances the quality of selection and reduces bias in decision-making.
  This hypothesis is grounded in studies demonstrating that algorithms can provide greater objectivity by applying standardized criteria and relying on large datasets (Mujtaba & Mahapatra, 2024; Rigotti & Fosch-Villaronga, 2024). At the same time, it is consistent with debates regarding the risk of perpetuating biases when training data are skewed (Fabris et al., 2023; Soleimani, 2025).
- H3: The degree of social acceptability of technology influences the level of artificial intelligence adoption in recruitment.
  This hypothesis is reinforced by literature showing that user perceptions and trust in algorithmic decisions play a critical role in successful implementation (Chen, 2023; Tursunbayeva, Di Lauro & Pagliari, 2018). Studies highlight that concerns regarding data protection and the potential loss of the "human touch" in recruitment may hinder AI adoption, regardless of the technical performance of the tools.

Thus formulated, the objectives and hypotheses define the conceptual framework of the research and lay the groundwork for the methodological approach presented in the following section.

3. Literature Review

In the specialized literature, the integration of artificial intelligence into recruitment and selection processes has experienced significant development in recent years, reflecting both the rapid advancement of digital technologies and the concerns regarding their impact on the labor market.

Studies have addressed this topic from multiple perspectives, ranging from the analysis of benefits and practical applications to the identification of ethical, legal, and social challenges arising from the use of such tools. The literature will therefore be presented in two major directions: on the one hand, the evolution and applications of AI in recruitment; on the other hand, the main challenges and debates that shape the field, as well as the research gaps that justify the present study.

3.1 The evolution and applications of artificial intelligence in recruitment

The earliest research on the use of artificial intelligence (AI) in human resources highlighted the capacity of algorithms to automate repetitive tasks, particularly the screening of CVs and the rapid identification of candidates' key skills (Mitchell, 2019). In the context of accelerated digitalization, these early applications contributed to reducing the time and costs of selection, representing a starting point for a broader transformation of recruitment.

The development of machine learning technologies and natural language processing has considerably expanded the scope of AI applications. At present, the specialized literature documents a wide range of uses, including algorithm-assisted video interviews, linguistic and micro-expression analysis, standardized psychometric tests, and candidate interactions through recruitment chatbots (Rigotti & Fosch-Villaronga, 2024; Marr, 2020). Recent studies confirm that these solutions contribute to greater efficiency and objectivity in the selection process, enabling organizations to manage large volumes of applications and improve the match between candidate profiles and job requirements (Mujtaba & Mahapatra, 2024; El Ouakili, 2025). At the same time, studies such as those by Brynjolfsson and McAfee (2014) show that the impact of AI goes beyond the operational level, having implications for productivity and for the way companies structure their human resources strategies.

3.2 Challenges, ethical debates, and gaps in specialized literature

Although multiple studies highlight AI's potential to reduce unconscious recruiter biases through the application of standardized criteria, others draw attention to the fact that algorithms may reproduce or even amplify existing discrimination when trained on biased datasets (Fabris et al., 2023; Soleimani, 2025). Kaplan and Haenlein (2020) emphasize this ambivalence, arguing that AI represents both an opportunity and a source of new risks. Along similar lines, Tursunbayeva, Di Lauro

and Pagliari (2018) show that the lack of transparency in algorithmic decisions can diminish candidates' trust, even when technical performance is high.

The ethical and legal dimensions of AI use remain a major concern. Chen (2023) highlights the challenges related to personal data protection, while Schellmann (2024) warns of the dangers of delegating critical decisions to opaque systems that may undermine the legitimacy of the selection process. Recent literature also emphasizes the candidate experience: while some studies indicate that digital tools can enhance perceptions of transparency and consistency (Rigotti & Fosch-Villaronga, 2024), others suggest that excessive automation reduces the "human touch" of the process and may generate reluctance (Marr, 2020).

Romanian contributions likewise underline the importance of integrating managerial responsibility and social dimensions into the use of emerging technologies. Burduș, Căprărescu, and Androniceanu (2019) stress the role of human capital in organizational performance, while Nicolescu and Nicolescu (2017) demonstrate that cultural differences significantly influence the adoption of innovations in management. Thus, the local context becomes essential for understanding how AI is perceived and applied.

In conclusion, specialized literature offers a complex and sometimes contradictory picture: AI increases the efficiency and accuracy of the recruitment process (Davenport et al., 2020), but raises challenges related to fairness, confidentiality, and social acceptability. At the same time, evident gaps remain: most studies focus on large multinational organizations, overlooking regional specificities or the realities of small and medium-sized enterprises, while user perceptions are rarely analyzed systematically. The present article contributes to addressing these gaps through an applied investigation of a sample of professionals active in the Bucharest–Ilfov region, providing an integrated perspective on the advantages and challenges posed by AI implementation in recruitment.

4. Methodology

The main objective of this research is to analyze the impact of artificial intelligence on recruitment and selection processes by investigating the perceptions of professionals active in the Bucharest–Ilfov region. The guiding research question of the study is: How does the use of AI influence efficiency, objectivity, and candidate experience in recruitment, considering the challenges related to algorithmic bias, data protection, and organizational resistance to change?

To achieve this objective, a mixed-methods methodology was employed, combining quantitative analysis, through a structured questionnaire, with qualitative analysis, through semi-structured interviews. This approach is justified by the need to capture both the general trends within the sample and the subjective nuances of respondents' experiences and perceptions (Creswell, 2018).

The sample consisted of 150 professionally active respondents, selected through a convenience sampling method, with a balanced distribution across fields of activity (services, industry, public administration). Participants ranged from 25 to

50 years old, with the inclusion criterion being a minimum of two years of professional experience. The response rate was approximately 75% (200 individuals contacted, 150 valid questionnaires).

For transparency, the socio-demographic characteristics of the sample are shown in *Table 1*.

Socio-Demographic Characteristics of the Sample

Table 1

Characteristic	Category	N	%
Gender	Male	78	52%
	Female	72	48%
Age	25–30 years	40	27%
	31–40 years	65	43%
	41–50 years	45	30%
Educational level	Higher education	98	65%
	Master's/Doctorate	52	35%
Field of activity	Services	60	40%
	Industry	45	30%
	Public administration	45	30%
Professional experience	2–5 years	42	28%
	6–10 years	56	37%
	Over 10 years	52	35%

Source: Author's own elaboration

The instrument used for the quantitative part consisted of a questionnaire with 25 items, 18 of which were scaled on a five-point Likert scale (1 = "strongly disagree", 5 = "strongly agree"). The items addressed topics such as perceptions of AI efficiency, the objectivity of the selection process, algorithmic transparency, and the impact on candidate experience. Examples of questions include: "I believe that the use of AI reduces the time required for the recruitment process" and "The use of AI contributes to a more objective selection process compared to a purely human-driven one." The pilot questionnaire was tested on a sample of 15 respondents, which allowed the verification of item clarity. The internal reliability of the scale was confirmed by calculating Cronbach's $\alpha = 0.83$, indicating a good level of consistency.

For the qualitative analysis, 15 semi-structured interviews were conducted online, each lasting an average of 45 minutes. The interview guide was structured around three themes: perceptions of AI's advantages and risks, personal experience with algorithm-assisted recruitment, and recommendations for the responsible use of AI. The interviews were fully transcribed and manually coded using a three-step thematic approach: initial coding, theme development, and theme validation. To enhance rigor, two individuals participated in the coding process, and inter-coder agreement was calculated (Cohen's $\kappa = 0.79$), indicating good consistency.

Quantitative data analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 26, with descriptive statistics (means, standard deviations, frequencies) and inferential tests (independent t-test for gender differences, ANOVA for differences across fields of activity). The significance threshold was set at $p < 0.05$. For the qualitative part, thematic analysis was conducted with the support of NVivo software, enabling the structuring of codes and the identification of relationships between themes.

This mixed-methods approach provides a robust methodological framework, allowing both the identification of general trends and the nuanced exploration of individual perceptions regarding the use of AI in recruitment.

5. Results

The analysis of data collected from the 150 respondents in the Bucharest–Ilfov region revealed clear trends regarding how artificial intelligence is perceived in recruitment processes. The results reflect both the benefits attributed to this technology, particularly increased efficiency and objectivity—and the limitations and challenges encountered in its implementation. The presentation that follows is structured along three main directions: the impact on the efficiency and quality of the selection process, the influence on decision-making bias and candidate experience, and the main challenges and constraints associated with AI adoption.

5.1 The efficiency and quality of the recruitment process

The analysis of the data shows that a majority of respondents (68%) reported that the use of artificial intelligence significantly reduces the duration of the recruitment process, while 55% indicated a decrease in associated costs. These results confirm the perception that the automation of initial stages, such as CV screening or interview scheduling, contributes to a visible increase in process efficiency.

Respondents' Perceptions of AI Efficiency in Recruitment

Table 2

Evaluated Indicator	Respondents (%)
Reduction of recruitment process duration	68%
Reduction of recruitment-associated costs	55%
Increase in selection accuracy	61%

Source: Author's own elaboration

The results are summarized in *Table 2* and visually illustrated in *Figure 1*, which highlight respondents' perceptions of the impact of AI on the efficiency of the recruitment process.

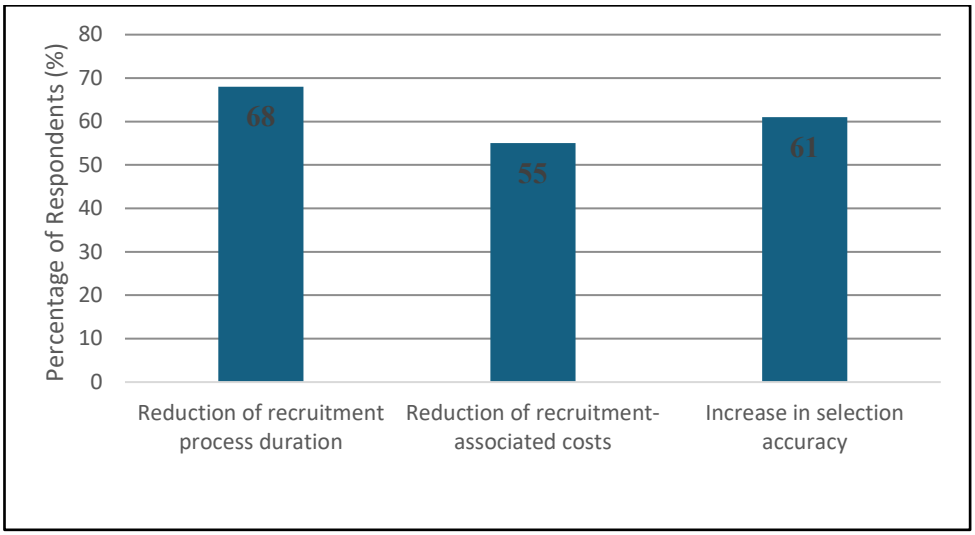

Figure 1. Respondents' Perceptions of AI Efficiency in Recruitment
Source: Author's own elaboration

The conclusions obtained are consistent with the international literature, which reports reductions of approximately 30% in recruitment duration through the integration of AI solutions (El Ouakili, 2025) and cost savings estimated at 15% (Marr, 2020). Moreover, 61% of the study participants consider that AI increases the accuracy of matching candidates to job requirements, a finding comparable to the results reported by Mujtaba and Mahapatra (2024), who identified a 45% improvement in selection accuracy. Thus, the data suggest that AI technologies not only accelerate the process but also contribute to enhancing the quality of recruitment decisions.

5.2 Decision-making bias and candidate experience

Regarding objectivity, 47% of respondents perceived a reduction in subjective influence in the selection process, suggesting that standardized algorithms may limit recruiters' unconscious biases. However, a share of participants (21%) expressed concerns about the lack of transparency in algorithmic decisions. These findings reflect the tension between the technical advantages and the ethical challenges of AI.

The results align with the studies of Rigotti and Fosch-Villaronga (2024), which emphasize AI's potential to enhance objectivity, but also with the warnings of Fabris et al. (2023) and Soleimani (2025), who demonstrated that algorithms may reproduce existing biases if trained on skewed data. From the perspective of candidate experience, 45% of respondents appreciated the transparency and clarity of AI-assisted processes, which confirms Marr's (2020) findings that positive perceptions depend on the quality of communication and digital interaction.

5.3 Challenges and limitations in AI adoption

The implementation of AI in recruitment is not without difficulties. According to the data obtained, the main challenges reported by respondents are: technical issues related to integrating algorithms into existing systems (33%) and the lack of adequate training for HR staff in using these tools (27%). In addition, 18% of participants mentioned managerial reluctance to delegate critical decisions to automated systems.

Challenges in AI Adoption Reported by Respondents

Table 3

Type of Challenge	Percentage of Respondents (%)
Technical difficulties in integrating algorithms	33%
Lack of training among HR staff	27%
Managerial reluctance to delegate decision-making	18%

Source: Author's own elaboration

The challenges reported by participants are presented in *Table 3* and graphically illustrated in *Figure 2*, providing an overview of the main barriers to AI adoption.

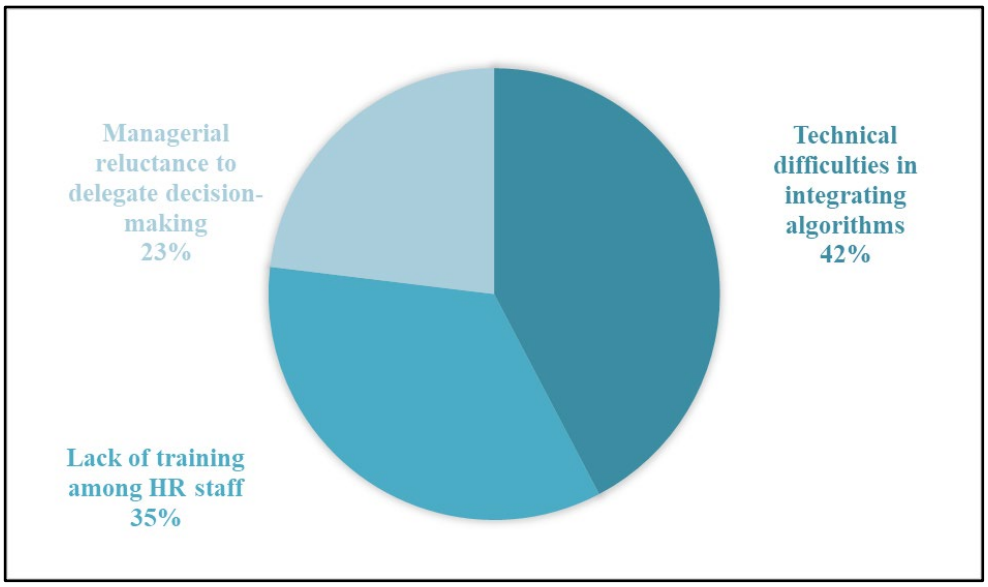

Figure 2. Challenges in AI Adoption Reported by Respondents
Source: Author's own elaboration

These results are supported by the specialized literature: Chen (2023) highlights the difficulties related to personal data protection and technical integration, while Schellmann (2024) warns about the risk that opaque algorithmic

decisions may undermine the legitimacy of the selection process. Kaplan and Haenlein (2020) also emphasize that the success of AI adoption depends on striking a balance between the technical benefits and the social acceptability of this technology.

To summarize the results obtained, *Figure 3* presents an integrated scheme of the AI-assisted recruitment process, highlighting the main benefits and challenges identified in the study.

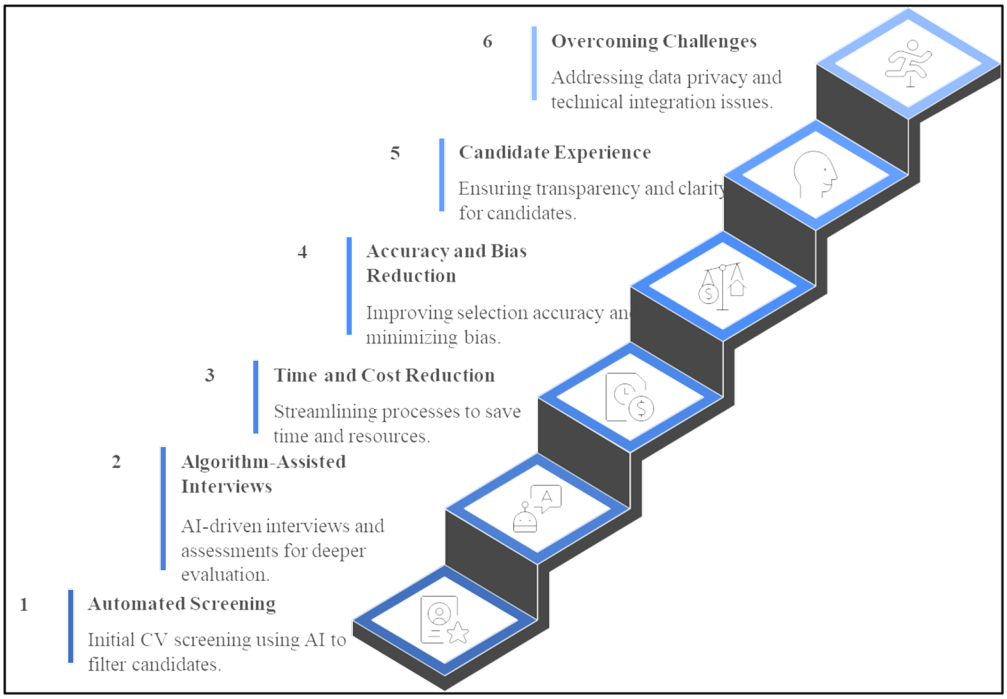

Figure 3. The Integrated Process of AI-Assisted Recruitment—Benefits and Challenges

Source: Author's own elaboration

6. Discussion and Conclusions

The results obtained confirm hypotheses H1 and H2, highlighting that the use of artificial intelligence contributes to increasing the efficiency of the recruitment process and to reducing biases in decision-making. Regarding hypothesis H3, it is only partially confirmed, since although respondents acknowledged the advantages of AI in standardizing evaluations, they also reported limitations related to trust in algorithms and personal data protection.

These findings are consistent with the observations of Fabris et al. (2023), who emphasize both AI's potential to optimize human resource selection and the risks associated with algorithmic bias and lack of transparency. Likewise, the results support Schellmann's (2024) warnings concerning the danger of excessive

delegation of critical decisions to automated systems, which may lead to a loss of managerial control and undermine organizational fairness.

The research results confirm that the integration of artificial intelligence into recruitment brings significant benefits, particularly by reducing time and costs, increasing selection accuracy, and diminishing subjective influence in decision-making. These findings validate hypotheses H1 and H2 and support the idea that AI can fundamentally transform the way organizations attract and select talent. With regard to hypothesis H3, it is only partially confirmed, as respondents acknowledge the advantages of algorithmic standardization, yet reservations persist regarding transparency, data protection, and trust in automated decisions.

The conclusions are consistent with the specialized literature, which highlights both the opportunities offered by AI and the ethical and organizational dilemmas associated with its use. Based on these results, several practical recommendations can be formulated for the responsible implementation of emerging technologies in human resources:

- periodic auditing of algorithms to identify and correct potential biases;
- adoption of a hybrid decision-making model, in which AI is complemented by human evaluation, particularly in the final stages;
- continuous training of HR specialists to acquire the skills necessary for critical and efficient use of digital tools;
- development of clear public policies to regulate AI use in recruitment and ensure transparency and fairness.

Nevertheless, the study has certain limitations. First, the sample was geographically limited to the Bucharest–Ilfov area, which restricts the generalization of the conclusions at the national or international level. Second, the sample size (150 respondents) constrains the robustness of the statistical analyses and does not allow for an in-depth exploration of demographic or sectoral differences. Third, the study relies on self-reported data, which may be subject to perception biases and social desirability effects. Therefore, the findings reflect participants' perceptions rather than objective measurements of recruitment processes.

These limitations can be addressed through future research directions, such as extending the study at national and international levels, using larger and more diversified samples, applying advanced quantitative methods, and conducting comparative studies across organizations or regions. In this way, a stronger theoretical and practical framework can be consolidated to support the development of ethical and effective practices for integrating AI into recruitment and selection processes

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