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Understanding Recruiters' Acceptance of Artificial Intelligence: Insights from the Technology Acceptance Model

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Abstract: The integration of new technologies in professional contexts has emerged as a critical determinant of organizational efficiency and competitiveness. In this regard, the application of Artificial Intelligence (AI) in recruitment processes facilitates faster and more accurate decision-making by processing large volumes of data, minimizing human bias, and offering personalized recommendations to enhance talent development and candidate selection. The Technology Acceptance Model (TAM) provides a valuable framework for understanding recruiters' perceptions of innovative technologies, such as AI tools and GenAI. Drawing on the TAM, a model was developed to explain the intention to use AI tools, proposing that perceived ease of use and perceived usefulness influence attitudes toward AI, which subsequently affect the intention to use AI tools in recruitment and selection processes. Two studies were conducted in Portugal to address this research objective. The first was a qualitative exploratory study involving 100 interviews with recruiters who regularly utilize AI tools in their professional activities. The second study employed a quantitative confirmatory approach, utilizing an online questionnaire completed by 355 recruiters. The qualitative findings underscored the transformative role of AI in recruitment, emphasizing its potential to enhance efficiency and optimize resource management. However, recruiters also highlighted concerns regarding the potential loss of personal interaction and the need to adapt roles within this domain. The results also supported the indirect effect of perceived ease of use and perceived usefulness on the use of AI tools in recruitment and selection processes via positive attitudes toward the use of these tools. This suggests that AI is best positioned as a complementary tool rather than a replacement for human decision-making. The insights gathered from recruiters' perspectives provide actionable recommendations for organizations seeking to leverage AI in recruitment processes. Specifically, the findings show the importance of ethical considerations and maintaining human involvement to ensure a balanced and effective integration of AI tools.

Keywords: artificial intelligence; recruitment and selection; technology acceptance model; perception; GenAI

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1. Introduction

We are currently living in the era of advanced technologies and systems, often referred to as Industry 4.0. Technological advances have profoundly reshaped how individuals live and work, as well as how organizations conduct business [1]. With the rapid pace of innovation, we are witnessing an unprecedented wave of novel solutions and growth

opportunities [2]. The continuous development of technologies such as digitization, robotic process automation, artificial intelligence (AI), and machine learning is driving transformative progress, offering significant opportunities for efficiency gains [3].

This revolution encompasses a convergence of information technologies with robotics, task automation, the Internet of Things, 3D printing, autonomous vehicles, and advancements in safety and defense systems, all of which contribute to enhancing human interaction and quality of life [4]. In this context, humans are increasingly dependent on technology, driven by an intrinsic need for intelligent tools and machines that simplify and improve various aspects of life [5]. Among these, AI has achieved remarkable progress, fundamentally transforming business operations. AI is defined as "a cluster of digital technologies that enable machines to learn and solve cognitive problems autonomously without human intervention" [6] (p. 188). The applications of AI span a wide array of sectors and industries, offering virtually limitless potential for innovation and impact. Similarly, AI technologies also present substantial opportunities to enhance Human Resources (HR) processes, particularly given their capacity to "collect data like a human, analyze and review it, and provide various recommendations for future activities based on employee activity history and behavior" [7]. These capabilities can be applied across multiple HR domains, including recruitment and talent acquisition, payroll management, reporting, and the implementation of policies and procedures.

AI tools have significantly transformed recruitment and selection processes, enabling organizations to streamline candidate sourcing, resume screening, and candidate matching [8,9]. Another branch used in recruitment and selection is Generative AI, defined as technology that produces new content, including text, music, and images, from textual prompts. However, a key challenge for HR today is the resistance some recruiters exhibit toward adopting AI tools in these processes, which creates significant barriers to their effective implementation [10,11].

Despite some resistance from recruiters, artificial intelligence (AI) offers significant advantages that can enhance recruitment and selection processes. By automating repetitive and time-consuming tasks, AI reduces administrative burdens on HR professionals, enabling them to prioritize strategic, high-impact activities. For example, AI can streamline candidate sourcing by scanning extensive databases and online platforms, identifying potential candidates based on predefined criteria. This process not only accelerates initial candidate selection but also increases efficiency and consistency [12].

AI's capability to process and analyze large datasets further enhances decision-making accuracy [13]. AI-powered tools can evaluate resumes, conduct skill-based assessments, and predict candidate success using historical data. These features reduce human bias and contribute to higher-quality hiring decisions. Moreover, AI-driven chatbots and virtual assistants (commonly referred to as Generative AI or GenAI) can manage routine candidate inquiries, provide updates on application statuses, and guide applicants through the recruitment process, thereby improving the candidate experience [9,10].

However, the implementation of AI tools also introduces challenges. These include addressing uncertainties associated with the technology, ensuring its purposeful use, optimizing its application to align with job-specific objectives, and fostering critical thinking to mitigate potential biases in the information generated [11,12].

Resistance to AI adoption often stems from concerns such as fears of job displacement or mistrust of technological reliability. Nonetheless, AI tools are designed to complement rather than replace human judgment [13,14]. By automating administrative and analytical tasks, AI enables HR professionals to focus on roles requiring human intuition and empathy, such as cultivating relationships, fostering a positive organizational culture, and enhancing employee engagement—elements crucial for recruitment success [11,13,15]. Despite

existing studies highlighting the benefits of adopting AI tools in recruitment and selection processes [12], there remains a limited understanding of how recruiters intend to incorporate these tools into their daily activities [11]. Moreover, the ways in which recruiters perceive and evaluate the utility and advantages of AI tools remain underexplored. Addressing this gap, the present research aimed to investigate the factors shaping recruiters' intentions to use AI tools, providing a deeper understanding of how these intentions are formed.

The TAM [15] provides a robust framework for explaining how recruiters form intentions to use AI tools in recruitment and selection. This model elucidates the processes by which individuals perceive, accept, and adopt innovative technologies, making it particularly valuable for understanding recruiters' attitudes toward AI tools. According to TAM, two core constructs—perceived usefulness and perceived ease of use—directly influence individuals' attitudes toward using new and unfamiliar technologies, which in turn shape their behavioral intentions to adopt them [15]. This theoretical model is especially relevant in the recruitment context, where AI tools are increasingly deployed to streamline processes and enhance decision-making [9].

Perceived usefulness refers to recruiters' beliefs about the degree to which AI tools can enhance their job performance [15,16]. When recruiters perceive these tools as substantially beneficial for achieving organizational objectives and improving personal efficiency, the likelihood of integrating AI into their recruitment and selection activities increases [11]. Perceived ease of use pertains to recruiters' perceptions of how intuitive and effort-free AI tools are to operate [17]. Tools that are user-friendly and seamlessly integrate with existing HR systems are more likely to gain acceptance [18]. Conversely, complex AI interfaces or tools requiring extensive training may deter adoption, even if the technology is deemed beneficial.

TAM further underscores the role of attitude toward use as a mediating factor between perceived usefulness/ease of use and the intention to adopt AI tools [15,16]. Recruiters are more likely to develop positive attitudes toward AI when they find the technology both easy to use and effective in enhancing their workflows. These favorable attitudes, in turn, reinforce their willingness to incorporate AI into daily operations [19]. Hence, TAM offers a suitable and comprehensive theoretical lens for understanding recruiters' perceptions of AI tools, the factors influencing their adoption, and the likelihood of successful integration into recruitment and selection processes.

Despite the increasing adoption of AI in HR, a significant gap persists in the literature concerning the current knowledge, perceptions, and utilization of AI-based tools in recruitment among HR professionals and recruiters. Although the benefits of AI implementation have been extensively documented [9–13], the extent to which HR managers are aware of these advantages and their willingness to integrate AI into their practices remains unclear [11].

In response to this gap, the present research had two primary objectives. First, it aimed to explore recruiters' perceptions of AI by identifying the advantages and disadvantages they associate with its use, as well as their intention to adopt AI tools in recruitment processes. Second, leveraging the TAM [15], the study sought to investigate the indirect effect of perceived ease of use and perceived usefulness on the intention to use AI tools in recruitment and selection, with positive attitudes toward these tools serving as a mediating factor.

The findings of this research have some remarkable theoretical and practical implications. Theoretically, this study contributes to the growing body of literature on the adoption of AI in human resource management by applying the TAM model to the specific context of recruitment and selection. It advances our understanding of the factors shaping recruiters'

intentions to use AI tools, particularly the roles of perceived usefulness, perceived ease of use, and positive attitudes toward AI [15,16]. By demonstrating the mediating role of attitudes, the study reinforces TAM's relevance in explaining technology adoption and highlights the psychological mechanisms through which recruiters evaluate and accept innovative technologies [18]. This nuanced understanding can inform future research exploring the intersection of AI and HR practices, as well as extend TAM to other HR-related technological applications.

From a practical perspective, the research offers actionable insights for organizations seeking to implement AI tools in recruitment. Organizations should prioritize intuitive interfaces and comprehensive training programs to address potential resistance and enhance recruiters' confidence in using AI [13]. Furthermore, the study's emphasis on attitudes as a mediating factor suggests that fostering a positive perception of AI through communication strategies, pilot programs, and testimonials from successful implementations could facilitate smoother adoption [19]. By addressing these factors, organizations can better integrate AI tools into recruitment processes, achieving improved efficiency and decision-making while maintaining the human-centric aspects of talent acquisition [20].

2. Theoretical Framework

2.1. Artificial Intelligence

AI has become a transformative force in daily life, encompassing a new generation of technologies designed to interact with the external environment in ways that increasingly emulate human intelligence [21,22]. While AI is often defined in varied and complex ways, Lakhangaonkar et al. [23] provided a succinct definition, describing it as the ability of machines to act and think like humans and work intelligently.

Pizzi et al. [24] highlighted that AI supports diverse tasks such as analyzing vast datasets, identifying patterns, drawing inferences, predicting events, and optimizing decision-making processes. It also facilitates activities such as generating insights, answering questions, and refining outcomes to enhance decision systems and meet specific objectives [8]. These capabilities not only emphasize the transformative potential of AI but also underscore the importance of ongoing research into its impact on workers and their adaptation to these evolving technologies.

In the context of human resource management, AI has garnered significant attention as a technology with the potential to reshape the future of HR practices [13], leveraging advanced machine learning algorithms to streamline and enhance key processes [14]. Its application, in areas such as recruitment and selection, represents an opportunity for organizations to streamline processes, enhance decision-making, and improve overall efficiency [24]. As highlighted by Choudhary [25], AI-driven tools and systems enable organizations to streamline HR processes, offering more efficient and effective approaches to managing human capital. By leveraging AI's capabilities in data analysis, predictive insights, and automation, HR departments can better align talent management strategies with organizational goals, ultimately fostering a more agile and competitive workforce [19].

2.2. Artificial Intelligence in Recruitment and Selection

The recruitment and selection process traditionally consists of three stages: sourcing, screening, and selecting [26]. However, the methods employed throughout these stages have undergone significant transformations over time, particularly with the automation and adoption of AI tools in various recruitment and selection activities.

The use of AI in recruitment begins with the sourcing phase, which is aimed at attracting external candidates for potential vacancies [27]. In this stage, recruiters have acknowledged that AI can significantly enhance efficiency and effectiveness [28]. For

instance, the use of AI eliminates the need for complex Boolean search strings, allowing recruiters to allocate more time and focus on subsequent stages of the recruitment process. Currently, sourcing often involves AI tools like interactive chatbots or automated answering systems, which assist in addressing minor inquiries, such as questions about job descriptions [26].

AI-driven chatbots and virtual assistants are particularly useful in managing high-volume tasks by providing instant responses to queries, scheduling interviews, and organizing responsibilities [29–31]. This not only improves response times but also enhances employee satisfaction [25,32]. Additionally, recruiting chatbots can engage potential candidates by informing them about job opportunities and fostering improved communication between companies and applicants [33]. Despite these advantages, AI tools have limitations, particularly in evaluating soft skills or other intangible qualities, which remain challenging for current systems [34].

Following the sourcing phase, the screening phase involves reviewing candidates' resumes, increasingly with the assistance of AI tools alongside HR professionals [35]. This process begins with an assessment of whether the candidate's qualifications match the requirements of the open position. AI algorithms are then employed to analyze resumes against predetermined criteria to identify the most suitable applicants [24]. Through machine learning, candidate matching systems can sift through large datasets, streamlining the process of selecting the best-fit candidates [33].

An example of such an AI tool is Ideal, which assists in screening resumes and shortlisting candidates based on job-specific criteria. Many recruiters predict that the role of HR specialists in the screening process will diminish over time, with AI systems eventually taking full responsibility for resume evaluation [34]. The rapid adoption of AI in screening procedures has led to an increased focus on efficiently assessing candidates' competencies [27]. This shift highlights the growing reliance on AI to automate and optimize the screening process, ensuring a faster and more accurate selection of candidates.

In the selection phase, the recruiter chooses the most suitable candidates from the pool of applicants based on predefined criteria. While AI tools play a significant role in assisting with candidate evaluation, the final selection decision remains with HR professionals. This decision is typically based on a combination of personal interviews, resume assessments conducted by either AI or HR and, for certain roles, group assessments [35].

An emerging AI-based method in the selection process is "video interview analysis", which uses algorithms for facial recognition and natural language processing to evaluate candidates. These AI tools analyze non-verbal cues such as body language and emotional expressions, helping recruiters assess communication skills more effectively [36]. Tools like HireValue analyze both verbal and non-verbal cues, while RecRight offers a video interviewing platform with AI capabilities for evaluating candidates' communication skills and cultural fit [37]. InterviewBuddy Pro, another AI-driven tool, aids in interview preparation by providing feedback and insights for improvement.

The widespread availability of AI tools in recruitment raises important questions regarding recruiters' perceptions of their use, particularly with respect to usability and associated challenges. Several studies have examined both the advantages and disadvantages of incorporating AI tools into recruitment and selection processes [28,29]. Evidence suggests that AI-powered algorithms are capable of automating a wide range of repetitive, administrative, and time-intensive tasks, particularly those involved in analyzing large volumes of applicant data [19]. These tasks include candidate sourcing, interview scheduling, and processing candidate information. The algorithms are proficient at identifying relevant qualifications and predicting job performance with high accuracy while also reducing the biases that often affect traditional recruitment methods [38].

This automation significantly enhances the efficiency of HR operations by facilitating faster decision-making, shortening time-to-hire, and allowing HR professionals to focus on more strategic tasks, such as identifying the most suitable candidates to meet organizational needs [28]. Additionally, AI tools contribute to improved candidate shortlisting, ensuring that potential hires align more closely with the firm's requirements [25].

In addition to operational efficiencies, AI also significantly elevates the candidate experience by facilitating consistent, transparent, and efficient communication throughout the recruitment process [30]. By ensuring timely updates and engagement, AI-driven solutions contribute to a more seamless and satisfactory journey for candidates, fostering a positive impression of the organization [31].

A recent study by Choudhary [27] identified three critical factors driving the adoption of AI in HR practices. First, the vast amounts of HR data generated by organizations, such as candidate CVs, necessitate advanced analytical tools capable of processing this data efficiently. Second, AI algorithms' ability to analyze data at a speed and scale beyond human capacity addresses the demand for faster and more accurate decision-making in areas like recruitment. Lastly, the push for AI solutions stems from the need to reduce human subjectivity, minimize biases, and provide tailored recommendations, such as those that are needed when there is the need to choose between diverse candidates, all of which contribute to improving employee experiences and fostering equitable HR practices.

However, concerns regarding the adoption of AI in HR persist. A study by Ore and Sposato [32] explored recruiters' perspectives and revealed apprehensions about potential risks associated with AI's reliability and accuracy. Recruiters expressed fears of losing the "human touch" in HR processes and raised concerns about the possibility of AI replacing human roles in recruitment.

Plus, the use of AI in recruitment and selection also presents a range of ethical, privacy, and legal concerns [30], as well as moral and vilification issues for potential candidates [33]. These ethical considerations are often neglected, with the focus primarily on the operational advantages of AI tools. However, it is critical that AI implementations are aligned with and regulated according to a company's core values and mission to avoid potential negative consequences.

Another significant challenge in adopting AI-based recruitment and selection processes is the need for skilled professionals to train the AI systems, ensuring accuracy and reducing errors [31].

For AI systems to be successfully integrated into HR functions, organizations must invest in robust data governance, appropriate AI infrastructure, and comprehensive employee training. Collaboration between HR specialists and AI systems is essential to maximize the potential of these technologies and achieve optimal outcomes [25]. Consequently, understanding recruiters' attitudes and perceptions toward the use of AI, as well as the various factors influencing these perceptions, becomes crucial for ensuring that AI is deployed effectively and responsibly in HR practices.

2.3. Intention to Use AI Tools in Recruitment and Selection

Previous literature highlighted that psychosocial factors play a central role in the acceptance of AI technology. Acceptance-related variables such as perceived usefulness, perceived ease of use and attitude have all been found to significantly and positively predict behavioral intention, willingness, and actual use of AI technology [39].

Davis developed the TAM in the 1980s to explore how users adopt information systems, particularly in the context of new technologies. TAM was the first to highlight the psychological factors influencing technology acceptance, and it is rooted in the Theory of Reasoned Action formulated by Davis [40].

Originally, TAM was designed to assess the impact of four internal variables on "actual use", which refers to real, effective engagement with the technology, such as AI tools [15]. The key factors influencing this actual use are the intention to use, which is shaped by the perceptions of perceived usefulness and ease of use, and the user's attitude toward using the technology. Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance [41]. For instance, in the context of AI tools, perceived usefulness may relate to improved decision-making accuracy, automation of routine tasks, or enhanced productivity. Perceived ease of use, on the other hand, refers to the "degree to which a person believes that using a particular system would be free of effort" [40] (p. 320). This aspect underscores the cognitive and physical effort associated with learning and operating the technology. Systems perceived as intuitive and user-friendly are more likely to foster positive attitudes and subsequent adoption. These two constructs influence a user's attitude toward technology, which in turn affects their intention to adopt it [15]. A positive attitude reflects favorable feelings and a willingness to engage with the system, whereas a negative attitude can hinder adoption. Crucially, attitude serves as a mediator, bridging the relationship between the perceived characteristics of the technology and the user's intention to use it [40].

Despite being one of the oldest models, TAM remains the most widely used framework for measuring technology acceptance. It has demonstrated high success rates in predicting behavioral intentions and is regarded as the preferred choice for evaluating technology acceptance across various contexts [16–18]. One of the reasons for its widespread use is its ability to incorporate additional variables, which allows for more flexibility and precision in diverse settings [39]. TAM is also favored for its simplicity, ease of use, and low cost, making it an effective tool for gathering general data on individuals' perceptions of technology [42]. This makes TAM an ideal model for understanding how users adopt and engage with new technologies, including AI tools, in HR contexts [19].

Thus, based on the TAM, it is posited that perceived ease of use and perceived usefulness will shape recruiters' intentions to adopt AI tools in recruitment and selection, primarily through their impact on recruiters' attitudes toward AI (see Figure 1). Considering this, we formulate the following research question: How do recruiters perceive AI tools in terms of their advantages and disadvantages, and will this perceptiveness subsequently affect the intention to use AI tools in recruitment and selection processes?

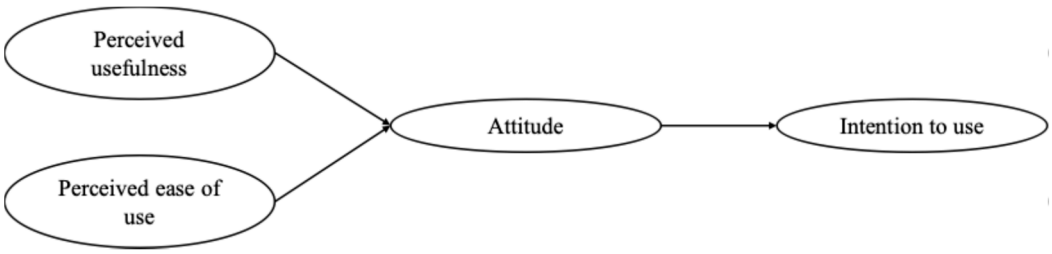

Figure 1. Model of intention to use AI tools in Recruitment and Selection.

Additionally, the following hypothesis was also formulated:

Hypothesis 1. *(a) Perceived ease of use and (b) perceived usefulness will influence recruiters' intentions to adopt AI tools through their attitudes toward such tools.*

3. Overview of Studies

Study 1 was qualitative exploratory research that utilized interviews with recruiters who have experience using AI tools. The aim was to gain a deeper understanding of how recruiters perceive these tools and the factors influencing their views and adoption.

Complementarily, study 2 employed a quantitative approach to empirically test the TAM in the context of AI adoption in recruitment. This methodological approach aimed to validate the relationships posited by the TAM and to explore how these constructs interact to influence recruiters' behavioral intentions to adopt AI technologies in their professional practices (see Figure 2).

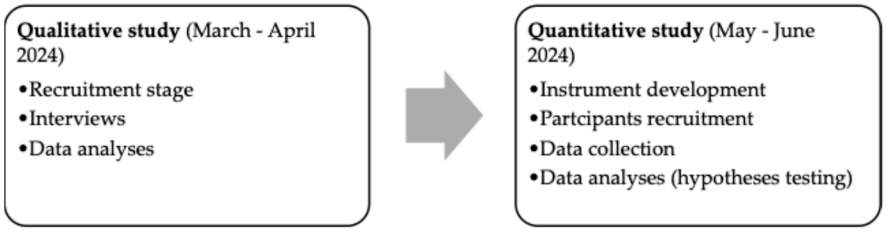

Figure 2. Overview of studies.

4. Study 1: Exploring Recruiters' Perceptions of AI Tools

4.1. Method

4.1.1. Procedure and Participants

Participants were recruited through LinkedIn, where personalized messages were sent to recruiters, inviting them to participate in a study exploring perceptions of AI in recruitment. Additionally, a snowball sampling technique was employed to reach recruitment professionals across Portugal, specifically targeting those actively working in recruitment and selection roles. A formal request was distributed to 133 professionals across the country, inviting them to take part in semi-structured interviews.

The inclusion criteria for participation required individuals to have a minimum of three years of experience as a recruiter and to use AI tools regularly in their daily work. Of the 133 professionals contacted, 100 responded and agreed to participate, yielding a response rate of 75.18%.

Prior to each interview, participants were thoroughly briefed about the study's objectives to ensure transparency and foster trust. This briefing emphasized that their participation was entirely voluntary and that they could withdraw at any time without any repercussions. Participants were also assured of the anonymity and confidentiality of their responses, with explicit guarantees that their identities would remain undisclosed and that the data collected would be used solely for academic purposes.

To facilitate openness and candid responses, participants were informed that the interviews would be recorded with their consent and that all data would be securely stored and anonymized during the analysis process. The interviews were conducted between March and April 2024, either remotely via video conferencing platforms or in person, depending on the participants' preferences and availability. Each interview followed a semi-structured format, allowing for an in-depth exploration of participants' experiences, perceptions, and concerns regarding AI tools in recruitment while providing the flexibility to probe further based on individual responses.

The final sample for this study comprised 100 participants, with a majority (77.8%) identifying as female. The age distribution revealed that most participants were between 26 and 30 years old (61%), followed by those aged 31–40 years (22%). In terms of educational background, the majority held a master's degree (55%), while 41% had completed an undergraduate degree. Professionally, the sample predominantly consisted of senior recruiters (78%), followed by human resources directors (20%). Regarding professional experience, the majority had been working as recruiters for 4 to 6 years (53%), while 20% reported 7 to 10 years of experience, and 27% had over 10 years of experience in the field.

This demographic and professional profile provides a robust basis for understanding the perceptions and experiences of seasoned recruitment professionals in relation to AI tools.

4.1.2. Interview Guide

This study investigated the benefits and challenges associated with the use of AI in recruitment processes, aiming to provide a nuanced understanding of recruiters' experiences and perceptions. To delve into this topic, participants were engaged with exploratory, open-ended questions that encouraged them to share their insights. The initial question, "Which AI tools have you used in your work?" sought to establish familiarity and practical exposure to AI technologies.

Subsequent questions probed deeper into their evaluations of these tools, including: "What are the benefits of AI in recruitment?" and "What are the current downsides and disadvantages associated with using AI in the recruitment process?" These follow-up inquiries were specifically designed to capture qualitative data reflecting the advantages, such as efficiency, time-saving, and enhanced data processing, alongside perceived drawbacks, including issues related to bias, loss of human touch, and potential ethical concerns.

By exploring both positive and negative dimensions, the study aimed to provide a comprehensive understanding of how AI tools are perceived by professionals in the field, shedding light on their practical utility, limitations, and the broader implications for human–AI collaboration in recruitment.

A pre-test was carried out with 35 people to ensure that there were no problems with the Interview guide. The respondents were asked to give feedback on the questions, and two questions were adjusted.

4.1.3. Data Analyses

Data analysis was performed using MAXQDA 2020 software [43], which supported the systematic coding and thematic analysis of participants' responses. This software allowed for the organization, categorization, and interpretation of qualitative data, enabling the identification of recurring patterns and themes. By leveraging MAXQDA's robust analytical capabilities, the study was able to extract meaningful insights into the benefits, challenges, and overall perceptions of AI tools in recruitment and selection processes, ensuring a rigorous and comprehensive exploration of the data.

4.2. Results

The qualitative analysis was conducted using a content analysis approach comprising two main phases. The first phase, referred to as the pre-exploration phase, involved an initial unstructured review of the material to identify and organize key aspects for subsequent analysis. This phase aimed to establish an overview of the data and to inform the coding process.

The second phase entailed coding and categorization. As Gibbs [44] explained, Coding is a way of indexing or categorizing the text to establish a framework of thematic ideas about it. Through this systematic process, raw data were transformed into meaningful categories, facilitating a nuanced discussion of the relevant characteristics of the content [45].

From the analyses, three categories emerged: (1) AI tools used in recruitment and selection, (2) benefits, and (3) disadvantages associated with AI tools.

4.2.1. AI Tools Used in Recruitment and Selection

Among the 100 participants who reported having used AI tools, the most referred were Chat GPT (66%), TeamTailor (14%), LinkedIn recruiter (5%), Microsoft Copilot (3%), Recruiter box and Smartrecruiters (1%).

4.2.2. Benefits of AI Tools

Based on responses from 100 recruiters, the content analysis identified six categories of advantages associated with the use of AI tools in recruitment: "making the process easier"; "accuracy and reduction of human bias"; "cost reduction", "optimization and time management"; "efficiency and efficacy" and "no advantages or skepticism".

The most frequently cited advantage was making the process easier (38%), followed by optimization and time management (20%) and improving efficiency (17%). Notably, a small percentage of recruiters (4%) reported perceiving no advantages associated with the use of AI tools (see Figure 3).

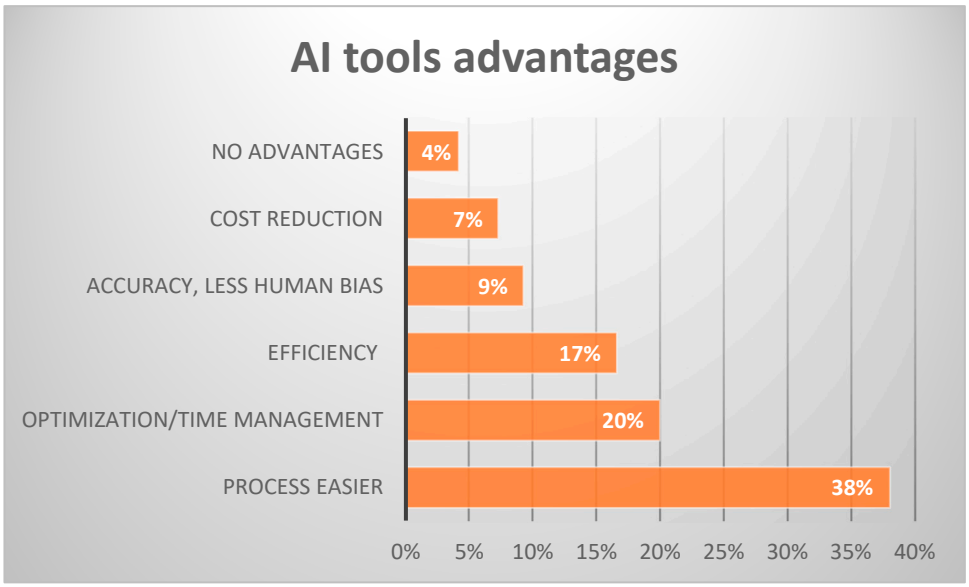

Figure 3. Main advantages associated with AI tools in recruitment and selection.

Firstly, the analysis revealed that AI tools significantly simplify the recruitment process, easing recruiters' workloads, as highlighted by 38% of participants. Recruiters emphasized that AI tools assist in reducing manual labor and enhancing efficiency, particularly in screening resumes. For instance, respondents noted that "these tools are especially valuable when managing large volumes of applications, as they can automate the elimination of profiles that do not meet job requirements. Specific advantages mentioned include "Assisting in the creation of particular documents, decreasing manual work, and improving the efficiency of resume screening", and "Providing instant access to information from any location, ensuring constant availability and faster communication through quick response capabilities".

Furthermore, the use of AI tools in recruitment can significantly reduce the time spent on repetitive, mechanical tasks such as creating advertisements, drafting emails, and preparing texts. This efficiency accelerates the recruitment process, particularly in the evaluation of resumes and curricula, enabling recruiters to concentrate on more strategic activities. Approximately 20% of respondents emphasized that AI tools enhance the speed of candidate screening by applying filters and criteria to improve efficiency, thereby reducing time spent on sourcing and other administrative tasks. Further, recruiters highlighted that AI also streamlines communication with candidates by ensuring timely responses and facilitating access to information, which simplifies resource location and optimizes various recruitment procedures. Some respondents noted that these tools contribute to a better work-life balance by "improving the quality of work, reducing administrative burdens", and freeing up time for creative endeavors. This shift allows recruiters to focus on critical aspects of their role, such as conducting interviews and engaging in recruitment phases

that require human judgment and interaction. One participant remarked that for simpler roles, "AI tools help save time and resources by automating the initial stages of resume screening". Another one mentioned that these tools provide the capacity for "care and assistance to individuals", enabling recruiters to redirect their attention toward high-value tasks while routine operations are managed efficiently by AI.

AI tools also improve the efficiency and effectiveness of recruitment processes, contributing to a smoother and more streamlined workflow (17%). By systematizing information, these tools make data more accessible and organized, allowing recruiters to manage large volumes of information effortlessly. Leveraging sophisticated algorithms and extensive datasets, AI can predict candidate behaviors and identify the most suitable individuals for specific roles with remarkable accuracy. This ensures that no qualified candidate is overlooked, enhancing the rigor and precision of the hiring process. Additionally, AI tools foster greater confidence in decision-making by providing data-driven insights and applying specific criteria and filters to deliver precise outcomes. These capabilities not only "improve the quality of recruitment decisions but also help organizations recruit candidates whose profiles align closely with job requirements".

AI tools were also recognized for their ability to deliver higher accuracy in data collection, reducing errors and enhancing overall recruitment efficiency (9%). Respondents highlighted that "AI tools significantly reduce errors in the recruitment process, preventing mistakes caused by human fatigue or distraction". These tools are "capable of detecting errors that might go unnoticed by humans, thereby improving precision in sourcing candidates and focusing more effectively on technical competencies". Moreover, AI minimizes execution errors and reduces bias in the recruitment process, contributing to more equitable hiring practices. By mitigating human subjectivity, AI has the potential to foster increased diversity within recruitment efforts, ensuring that decisions are guided by objective criteria.

A smaller proportion of recruiters (7%) indicated that AI tools could reduce costs by automating various steps in the recruitment process. For instance, "AI can alleviate recruiters' workloads by generating appealing templates for job postings and emails, standardizing documents, and improving overall performance through automation". These capabilities contribute to a more streamlined and cost-efficient recruitment workflow.

Lastly, a minority of recruiters (4%) expressed skepticism, perceiving no benefits from AI tools or remaining uncertain about their long-term impact.

These findings underscore the transformative potential of AI tools in recruitment, particularly in enhancing efficiency, accuracy, speed, and overall process management. While some skepticism persists about the long-term implications of AI, its immediate benefits for recruiters and candidates are apparent, positioning it as a valuable asset in contemporary recruitment practices.

4.2.3. Disadvantages of AI Tools

Based on recruiter feedback regarding the use of AI tools in recruitment, seven categories emerged, offering a nuanced perspective on the potential disadvantages of integrating AI into the recruitment process. The categorization of these insights resulted in the following categories: "lack of human touch" (36%); "possibility of error and lack of precision and reliability" (25%); "job reduction and unemployment" (18%); "ethical issues and privacy and data protection" (15%); "resistance to change" (11%); "AI implementation costs" (9%) and "excessive dependence" (7%).

Firstly, a prominent concern raised by recruiters was the lack of human touch in the recruitment process, cited by 36% of respondents. Despite the advanced capabilities of AI, many recruiters felt it falls short in capturing the individuality and nuances of candidates. As noted by several participants, "soft skills are difficult to evaluate with a machine", and

there is a "lack of emotion and empathy that make us (humans) unique". This absence of interpersonal interaction leads to a "loss of a closer relationship with candidates", resulting in a process perceived as less humanized and personalized.

Recruiters emphasized that personalization and humanization are vital for fostering positive candidate engagement—an aspect AI still struggles to replicate effectively. "Without these elements, candidates may feel undervalued, potentially impacting their overall experience and perception of the hiring organization".

Another key disadvantage frequently mentioned by recruiters was the possibility of errors and the lack of precision and reliability in AI tools, which was cited by 25% of respondents. "Errors or bugs in the systems can significantly impact outcomes, particularly when inaccurate or incomplete data is input, or when algorithmic flaws generate unreliable results". This lack of rigor and inadequate data validation can lead to the inadvertent exclusion of qualified candidates. As one recruiter noted, the "lack of critical analysis and insufficient software precision can result in false positives and negatives, ultimately hindering the candidate selection process". Additionally, concerns were raised about "poorly constructed algorithms that may fail to identify relevant profiles", further emphasizing the potential risks associated with AI tools in recruitment. Additionally, several limitations of AI tools were identified. For example, AI often focuses narrowly on technical skills while "ignoring important interpersonal skills" that are essential for many roles. Others noted instances where AI "generalizes information without adapting to specific situations", leading to potentially inaccurate or incomplete assessments.

The potential extinction of jobs emerged as one of the most serious concerns, mentioned by 18% of recruiters. The fear is that "AI can lead to a reduced demand for specialized labor, ultimately contributing to increased unemployment". "The progressive replacement of people by machines or algorithms is seen as a transformation that can negatively impact those who thrive in the human-centered aspects of the recruitment process".

Ethical and legal challenges associated with AI in recruitment emerged as critical concerns for 15% of the recruiters. A prevalent issue highlighted was the potential for bias and discrimination, as algorithms, if not carefully monitored and refined, could inadvertently perpetuate existing biases. Respondents noted the importance of actively addressing this risk to ensure fair and equitable recruitment practices. Another significant concern is the "legal uncertainty surrounding the use of AI, particularly regarding data protection and the handling of candidates' personal information". Recruiters emphasized that "implementing AI in recruitment must be accompanied by strict ethical guidelines to prevent discriminatory practices and ensure compliance with relevant data protection laws". Furthermore, one recruiter observed that "AI centralizes tasks at the source, creating incompatibility with various recruitment platforms, which may exclude candidates with diverse or atypical experiences".

Resistance to change emerged as a significant challenge, identified by 11% of recruiters. Many expressed concerns about the "lack of trust in AI systems and the difficulty of adaptation among both managers and employees". The process of "understanding, learning to use new technologies, and adjusting established workflows can be a demotivating factor for some, hindering the smooth adoption of AI tools in recruitment". Resistance often stems from the perception that technology may not align with traditional, human-driven recruitment practices and, as such, promote negative attitudes toward technology.

Plus, operational costs of AI implementation were frequently cited as a concern by 9% of recruiters. The integration of AI tools with existing systems often presents technical challenges, and the maintenance of these tools can be both expensive and complex. Adopting AI requires a significant investment not only in technology but also in employee training to ensure that all personnel are proficient in using the new tools effectively. Additionally,

"ongoing maintenance and updates are necessary to keep AI tools functioning at optimal levels, ensuring their continued effectiveness and seamless integration with other systems. This financial and operational burden is a key consideration for organizations looking to implement AI in their recruitment processes".

Lastly, the issue of excessive dependence on technology (7%) was raised. This concern centers around the potential loss of control over decision-making, as AI tools might influence choices in ways that bypass human judgment. Recruiters also highlighted the "risk of trivializing work, where the automation of routine tasks could diminish the perceived value of human contributions in recruitment processes, leading to a shift in the nature of the work itself" (see Figure 4).

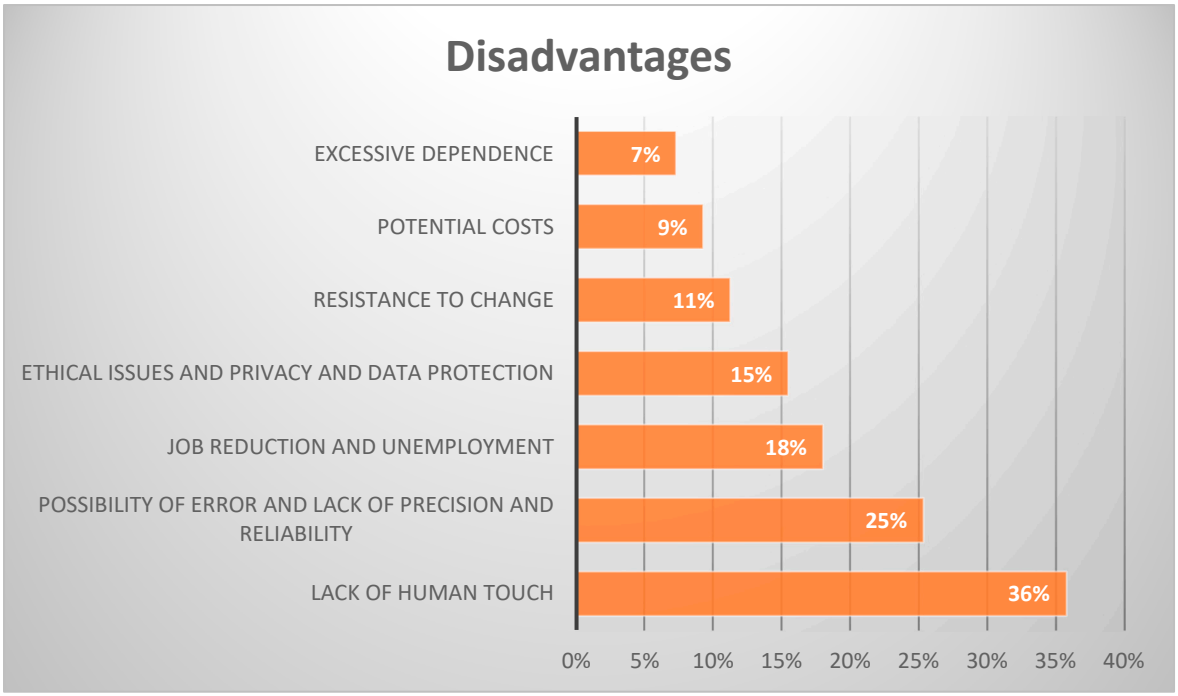

Figure 4. AI tools disadvantages in recruitment and selection.

4.2.4. Discussion

In essence, while AI tools offer significant benefits, such as enhanced efficiency and the ability to process vast amounts of data, their implementation must be carefully balanced against critical factors, including the importance of personalization, ethical considerations, and technological and operational challenges (see Table 1 for a summary of findings).

Table 1. Summary of qualitative findings.

Benefits of AI Tools
"Making the process easier" (38%)
"Optimization and time management" (20%)
"Efficiency and efficacy" (17%)
"Accuracy and reduction of human bias" (9%)
"Cost reduction" (7%)
"No advantages or skepticism" (4%)

Table 1. *Cont.*

Disadvantages of AI Tools
"Lack of human touch" (36%)
"Possibility of error and lack of precision and reliability" (25%)
"Job reduction and unemployment" (18%)
"Ethical issues and privacy and data protection" (15%)
"Resistance to change" (11%)
"AI implementation costs" (9%)
"Excessive dependence" (7%).

5. Study 2: Quantitative Validation of the Technology Acceptance Model in AI Recruitment

5.1. Method

5.1.1. Participants and Procedure

Participants were recruited through various online platforms, including LinkedIn and Facebook, via a link directing them to an online questionnaire hosted on Google Forms. Additionally, a snowball sampling method was employed by contacting employees in Portugal who were working in the recruitment field, specifically recruitment and selection managers and HR directors. A formal request to share the questionnaire was sent via email to 24 recruitment employees across the country. Of these, only two responded, with one agreeing to distribute the link among colleagues.

All participants were informed about the study's objectives, emphasizing its anonymity, confidentiality, voluntary nature, and explicit academic purpose. Data collection took place from the beginning of May to the end of June of 2024. The initial sample comprised 366 individuals, but 11 were excluded for not meeting the inclusion criteria (working in the recruitment and selection field).

The final sample for this study consisted of 355 participants, of whom 285 (80.3%) identified as female and 69 (19.4%) as male. Regarding age distribution, 22% of participants were between 18 and 25 years old, 27% were between 26 and 30 years old, 27% were between 31 and 40 years old, 13.2% were between 41 and 50 years old, and 10.8% were over 50 years old. In terms of educational background, the majority of participants (56.3%) held a master's degree or equivalent, while 39.5% had a bachelor's degree or equivalent. A smaller proportion had completed secondary school or equivalent (2.3%) or held a Ph.D. or equivalent (1.1%). Regarding their professional roles, 37.5% of participants were senior recruiters, 28.2% were junior recruiters, 13.5% were team managers, 9.9% were HR directors, 4.8% were trainees, 2.7% were recruitment and selection managers, and 3.4% were HR administrators. Finally, in terms of experience with AI tools, 27.6% of participants reported having used AI tools in their daily work, whereas 72.4% indicated no prior use of such tools.

5.1.2. Instruments

The survey instrument was developed using established scales from prior research to ensure both validity and reliability. Items assessing perceived ease of use, perceived usefulness, attitudes, and intention to use were adapted from validated instruments widely recognized in the literature, e.g., [40,46,47]. The initial survey questions were drafted in English and subsequently translated into Portuguese. A back-translation process was employed to ensure linguistic and conceptual accuracy, enhancing the reliability of the translated instrument. All scales were answered on a 5-point Likert scale ranging from "Strongly disagree" to "Strongly agree" (see Table 2).

Table 2. Measurement items.

Variable	Items	Reference
Perceived Usefulness α = 0.895 ω = 0.90	Using AI-based tools in recruitment and selection would improve my job performance in doing my work. Using AI-based tools in Recruitment and selection would improve my productivity. Using AI-based tools in Recruitment and selection would enhance my effectiveness in my job. Using AI-based tools in Recruitment and selection would save me time. I would find AI-base tools in Recruitment and selection useful in my job.	On the basis of Davis et al. [16]
Perceived ease of use α = 0.85 ω = 0.85	Learning to operate the AI-based tools in Recruitment and selection would be easy for me. I would find it easy to get the AI-based tools to do what I want it to do. It would be easy for me to become skillful in the use of the AI-based tools. My interaction with AI-based tools would be clear for me. I would find the AI-based tools easy to use in Recruitment and selection.	On the basis of Davis [16,41], Mark Turner et al. [48], and Davis and Venkatesh [49]
Attitude α = 0.937 ω = 0.936	Using AI-based tools in Recruitment and selection is, in general, a good idea. I feel positive towards the use of AI-based tools in Recruitment and selection. Using AI-based tools in Recruitment and selection would make work more interesting. I would like to work with AI-based tools in Recruitment and selection for my future coursework.	On the basis of Ghani et al. [50]
Intention to use α = 0.883 ω = 0.885	Assuming I have access to AI-based tools, I intend to use them throughout this semester and the next. I predict I will use AI-based tools in the next couple of years. I plan to use AI-based tools in the next couple years as often as possible.	On the basis of Venkatesh and Davis [51] and Venkatesh et al. [43]

Perceived Usefulness was measured with five items from the original questionnaire [15,40]. An item example is "Using AI-based tools in Recruitment and selection would improve my job performance in doing my work".

Perceived ease of use was measured with two items from Davis [16,41], two from Mark Turner et al. [48], and one item from Davis and Venkatesh [49] (e.g., "Learning to operate the AI-based tools in Recruitment and selection would be easy for me").

Attitude was measured with a 4-item scale developed by Ghani et al. [50]. An item example is as follows "Using AI-based tools in Recruitment and selection is, in general, a good idea".

Intention of use was measured with one item from Venkatesh and Davis [51] (e.g., "Assuming I have access to AI-based tools, I intend to use it throughout this semester and

the next") and two items from Venkatesh et al. [43] (e.g., "I plan to use AI-based tools in the next couple years as often as possible").

Control variables were included to assess the model. Specifically, age, gender, and years of professional experience were controlled for, as these factors have been shown to significantly influence employees' perceptions of modern technologies, such as AI tools, as well as their attitudes and intentions to adopt them [11].

5.1.3. Data Analysis

We conducted data analysis in two stages using SPSS 29 and JASP [52]. First, regarding quantitative data, confirmatory factor analyses (CFAs) were performed using maximum likelihood estimation to evaluate the proposed measurement model, assess discriminant validity, and address concerns regarding common method bias (CMB). The model's fit was assessed using multiple indices, including χ^2/df (degree of freedom), RMSEA (root-mean-square error of approximation), CFI (comparative fit index), and SRMR (standardized root mean square residual), following guidelines by Kline [53]. A model was considered acceptable if $\chi^2/df < 5$, RMSEA and SRMR < 0.08, and CFI > 0.90 [53].

As shown in Table 3, the hypothesized four-factor model, comprising perceived usefulness, perceived ease of use, attitude, and intention to use, was compared against three alternative models: (a) a three-factor model combining perceived usefulness and perceived ease of use, (b) a two-factor model combining perceived usefulness and perceived ease of use, and another factor combining attitude and intention to use into separate factors, and (c) a single-factor model collapsing all items into one factor. The three-factor model was included to evaluate potential overlap between perceived usefulness and perceived ease of use, given possible similarities in their scale items. The two-factor model was tested to detect potential conflations between attitudes and intention to use. Finally, the single-factor model was used to examine the risk of CMB [54].

Table 3. Confirmatory factor analyses.

Models	χ^2/df	CFI	TLI	RMSEA	SRMR
Model 1	3.64	0.94	0.93	0.08	0.05
Model 2	6.38	0.89	0.87	0.12	0.07
Model 3	7.48	0.87	0.85	0.14	0.07
Model 4	8.41	0.85	0.82	0.14	0.07

The confirmatory factor analysis (CFA) results indicated that the proposed four-factor model provided a superior fit compared to alternative models (see Table 3). Specifically, the four-factor model demonstrated better performance than the three-factor model, underscoring clear empirical distinctions between the variables. These findings were further corroborated by the square roots of the Average Variance Extracted (AVE) values (see Table 4), which were consistently greater than the correlations between each variable, as recommended by prior guidelines [44].

To evaluate discriminant validity—demonstrating the uniqueness of the indicators for each latent variable—the Maximum Shared Variance (MSV) was also analyzed. Results showed that for all constructs, the MSV was lower than the AVE, providing additional support for discriminant validity.

Convergent validity, which assesses the extent to which indicators reliably correlate with their respective latent constructs, was also evaluated. The AVE values for all latent constructs in the study exceeded the recommended threshold of 0.50, demonstrating sufficient convergent validity. Additionally, the AVE for each construct was higher than its correlations with other constructs, further affirming the distinctiveness and coherence of each

latent variable. In summary, the study successfully confirmed the reliability, convergent validity, and discriminant validity of the measurement model. These findings strengthen the robustness and validity of the constructs examined in this research.

Table 4. Descriptive statistics.

	M	SD	CR	AVE	MSV	1	2	3	4	5
1. PU	3.86	0.77	0.92	0.71	0.84	(0.68)				
2. PEU	3.73	0.69	0.90	0.64	0.80	0.51 **	(0.28)			
3. Attitude	3.70	0.89	0.96	0.85	0.92	0.83 **	0.53 **	(0.68)		
4. ITU	3.71	0.95	0.93	0.81	0.90	0.71 **	0.53 **	0.80 **	(0.64)	
5. Age	-	-	-	-	-	−0.03	0.00	0.00	0.03	
6. Tenure	-	-	-	-	-	−0.03	−0.02	0.03	0.07	0.73 **
7. Gender [1]	-	-	-	-	-	0.02	−0.00	−0.01	0.05	0.12 *

Note. ** $p < 0.01$, * $p < 0.05$, $N = 355$. [1] Gender: 1—Female; 2—Male. The square roots of the Average Variance Extracted (AVE) are presented in parentheses. M = Mean; SD = Standard Deviation; AVE = Average Variance Extracted; MSV = Maximum Shared Variance; CR = Composite Reliability. PU = Perceived usefulness; PEU = Perceived ease of use; ITU = Intention to use.

In the third stage of analysis, we tested the study hypotheses using Structural Equation Modeling (SEM) with JASP software, version 0.19.3 [52]. This approach allowed for a robust examination of the relationships between the constructs in the proposed model, providing insights into both direct and indirect effects.

5.2. Results

5.2.1. Descriptive Statistics

Table 4 shows the means, standard deviations, and correlations of the study.

5.2.2. Hypotheses Testing

The structural equation model demonstrated a good fit to the data: $\chi^2(353) = 4.35$, $p < 0.001$, CFI = 0.99, TLI = 0.98, RMSEA = 0.07, 90% CI [0.06, 0.08], SRMR = 0.05 [55]. The standardized coefficients for the relationships between the variables are presented in Figure 5.

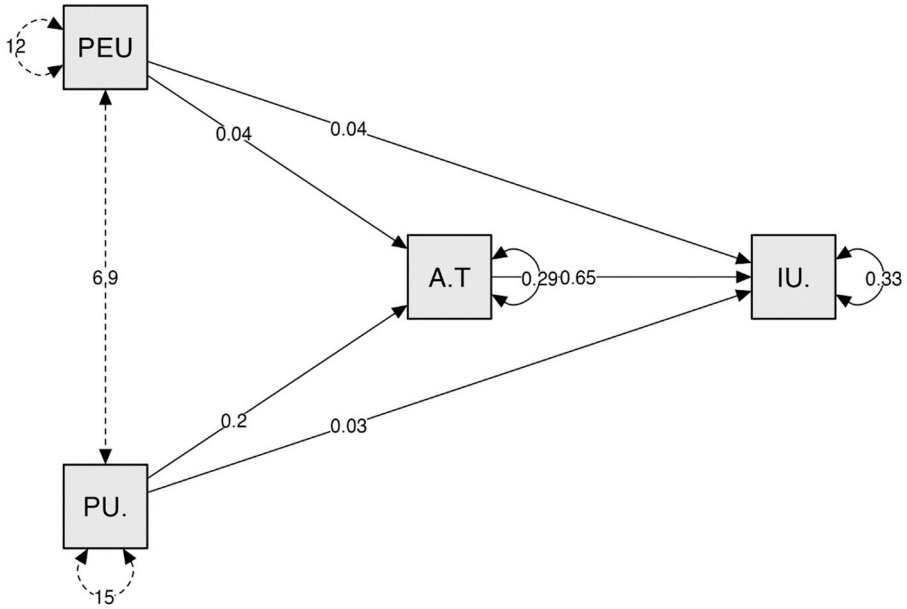

Figure 5. Path coefficients of the proposed mediation model. *Note.* PU = Perceived usefulness; PEU = Perceived ease of use; AT = Attitude; IU = Intention to use. All path coefficients were significant.

Hypotheses 1 proposed that attitudes toward AI tools would mediate the relationship between (a) perceived ease of use and (b) perceived usefulness, thereby influencing recruiters' intentions to adopt AI tools. The analysis of indirect effects revealed that the influence of (a) perceived ease of use and (b) perceived usefulness on recruiters' intentions to adopt AI tools, mediated by their attitudes toward these tools, was statistically significant ($\beta = 0.027$, $p < 0.001$, 95% CI [0.01, 0.04]; $\beta = 0.127$, $p < 0.001$, 95% CI [0.10, 0.16], respectively). The model accounted for 66.6% of the variance in intentions to use AI tools ($R^2 = 0.666$), indicating a strong explanatory power. Thus, Hypothesis 1 was supported by the data (see Table 5 for a summary of the results).

Table 5. Hypotheses testing structural equation modeling path coefficients.

Direct Effect								
							95% CI	
			Estim.	SE	z-value	*p*	LLCI	ULCI
PEU	→	IU	0.036	0.01	3.433	<0.001	0.01	0.06
PU	→	IU	0.028	0.01	1.968	0.04	0.00	0.06
Indirect Effect								
							95% CI	
			Estim.	SE	z-value	*p*	LLCI—ULCI	
PEU	At	IU	0.027	0.007	4.066	<0.001	0.01	0.04
PU	At	IU	0.127	0.01	10.178	<0.001	0.10	0.16
Total Effects								
							95% CI	
			Estim.	SE	z-value	*p*	LLCI	ULCI
PEU	→	IU	0.06	0.012	5.268	<0.001	0.03	0.09
PU	→	IU	0.155	0.011	14.318	<0.001	0.12	0.18

Note. Delta method standard errors, bias-corrected bootstrap confidence intervals, ML estimator. PU = Perceived usefulness; PEU = Perceived ease of use; AT = Attitude; IU = Intention to use.

5.2.3. Discussion

This second study supports the hypotheses and demonstrates the mediating role of recruiters' attitudes toward AI tools in the relationship between perceived usefulness, perceived ease of use, and intentions to adopt these technologies.

6. General Discussion

Given the rapid technological advancements in the application of AI tools within recruitment and selection processes [8,9], this study seeks to contribute to the growing body of knowledge by exploring recruiters' perceptions of these tools and examining the factors shaping their intentions to adopt them. Understanding recruiters' perspectives is pivotal for addressing potential resistance and fostering a more favorable disposition toward the adoption of AI technologies. Moreover, investigating these perceptions provides valuable insights into how recruiters evaluate the utility and challenges of implementing AI in recruitment.

Grounded in the TAM [15,56], this research delves into the extent to which perceived usefulness and perceived ease of use influence recruiters' intentions to utilize AI tools, with attitudes toward these technologies acting as a mediating variable.

The findings from the qualitative exploratory study reveal a nuanced perspective on the use of AI tools in recruitment, highlighting both their advantages and disadvantages.

On the positive side, recruiters identify key benefits such as streamlining processes, saving time, and enhancing overall efficiency. Conversely, significant concerns are raised, including the inevitable lack of human touch in candidate interactions, the potential for algorithmic bias, issues with precision and reliability in candidate selection, and the broader implications for job displacement and unemployment. These findings underscore the complexity of integrating AI into recruitment, balancing its operational benefits with ethical and practical challenges.

Specifically, recruiters note that AI tools can optimize recruitment workflows, boost productivity, and enable a more strategic allocation of time and resources. This has also been acknowledged in the literature, with several studies highlighting the benefits of the use of AI tools in recruitment and selection processes [27–29]. Moreover, these tools appear to contribute to greater accuracy and predictability [18], establishing themselves as invaluable assets for achieving better hiring outcomes [12]. By fostering reliability and inclusivity while upholding high standards of precision and efficiency, AI tools are positioned as integral components in modernizing recruitment practices [14,38].

However, the implementation of AI tools is not without challenges and potential drawbacks [57]. Recruiters stress the importance of balancing the efficiencies offered by AI with the preservation of essential human elements in recruitment, such as empathy, personal interaction, and a nuanced understanding of candidates. The lack of a "human touch" in recruitment is a significant concern, as these interpersonal qualities are seen as pivotal in creating meaningful candidate experiences. This is also in line with some studies that have evidenced the need for parts of the recruitment and selection process to have a "human hand", especially in what concerns decision-making [28,39]. Following this, ethical issues, including algorithmic bias and challenges in assessing soft skills or non-traditional experiences, also emerge as critical concerns. These issues underscore the need for rigorous measures to ensure the accuracy and reliability of AI systems and to safeguard against potential biases or ethical violations, as also evidenced by Koechling et al. [9].

Overall, the diverse opinions shared by recruiters reflect the complexity of AI adoption in recruitment [14]. For instance, while some believe that AI minimizes human error, others worry that it can introduce additional biases and errors due to flawed algorithms or data inaccuracies. Similarly, perspectives on costs are divided: some highlight AI's potential to reduce operational expenses, while others underscore the significant investment required for implementation, training, and maintenance. Such discrepancies highlight the nuanced nature of AI integration, necessitating a balanced consideration of both its advantages and potential pitfalls [17,29,57].

In essence, while AI tools provide notable advantages, such as improved efficiency and the capacity to process extensive datasets [36], their implementation must be carefully balanced with critical considerations, including the need for personalization, ethical concerns, and technological and operational constraints [28]. AI should be regarded as a complementary tool that supports and enhances, rather than substitutes, the indispensable role of human recruiters —melding automation with empathy, interpersonal engagement, and critical analytical thinking [46]. Hence, integrating ethical frameworks and operational safeguards into the design and application of AI tools is imperative to uphold their effectiveness and credibility in recruitment practices [20,25].

6.1. Theoretical Implications

The theoretical implications of this study are multifaceted, offering significant contributions to the growing body of literature on technology acceptance and the integration of AI in human resource management, particularly in the recruitment process.

First, the findings from both studies shed light on the perceived advantages and disadvantages associated with the adoption of AI tools by recruiters in their daily tasks. On the one hand, participants highlighted numerous benefits, such as enhanced efficiency, time savings, and the ability to process large volumes of data, which collectively streamline recruitment processes and improve decision-making. On the other hand, the studies also revealed significant concerns, including the potential lack of human touch, biases in algorithms, and ethical considerations, as well as challenges related to reliability and precision. These findings underscore the dual nature of AI adoption in recruitment, demonstrating that while AI tools can enhance operational capabilities, their integration must address critical concerns to ensure a balanced and effective approach to recruitment and selection.

Second, by employing the TAM [15] as a theoretical framework, this research provides empirical evidence supporting the role of perceived usefulness and perceived ease of use in shaping recruiters' attitudes and intentions toward adopting AI tools. The findings confirm that these perceptions are pivotal in influencing recruiters' attitudes, which, in turn, foster stronger intentions to use AI tools [16,56]. This relationship aligns with the core propositions of the TAM, highlighting the importance of how individuals perceive the utility and ease of use of innovations—in this case, AI tools—as critical drivers for motivating their adoption in professional settings.

However, while both perceptions are relevant, Davis [41] found that perceived usefulness tends to have a stronger influence on attitude than ease of use. Specifically, in Davis's study, the regression coefficients indicated that usefulness exerted over four times as much direct influence on attitude as ease of use (0.65 vs. 0.13). Furthermore, perceived ease of use was shown to have a relatively minor direct effect on attitude, instead exerting its influence indirectly through its significant effect on perceived usefulness. Davis [41] explained the predominance of perceived usefulness by noting that it often encapsulates the "benefits" and "costs" of adopting new technology. In contrast, ease of use reflects the effort required to use the technology [40], which can be viewed more negatively as an additional cost from the user's perspective [56]. This interpretation aligns with previous findings in the literature, such as those of Kelly et al. [58], who emphasized that perceptions of usefulness are often the strongest predictor of technology adoption, especially in the context of AI. Kelly and her colleagues [59] concluded that perceived ease of use plays a smaller role in AI tools adoption, as it pertains primarily to the technical aspects of usage, which have become less critical as users gain more technological familiarity in their daily lives.

However, these conclusions do not align with the findings of the present study, where ease of use demonstrates a comparatively higher correlation and variance with attitude. Specifically, the present study reveals different results, with regression coefficients of 0.71 for ease of use and 0.53 for usefulness, suggesting a stronger influence of ease of use in this context. Although Davi's [41] explanation is valid, a plausible reason for the higher influence of ease of use in the current study may be attributed to the characteristics of the sample. Notably, only 25.1% of the participants are over the age of 41, a demographic more likely to view new technology as challenging and effortful, which may diminish its perceived utility. This discrepancy invites further investigation into how contextual and demographic factors influence the relative importance of ease of use and usefulness, particularly in the context of AI adoption in recruitment.

Furthermore, the study underscores that positive perceptions of usefulness and ease of use lead to favorable attitudes, which act as mediating mechanisms explaining why these perceptions translate into stronger intentions to adopt AI tools. A positive attitude—an individual's positive or negative feelings about performing the target behavior [40]—towards AI tools increases the likelihood of their intended use. The identified indirect effect underscores the role of attitudinal factors in technology adoption and suggests that fostering

positive attitudes towards AI through training and positive experiences can enhance their adoption in recruitment [18]. This aligns with the original TAM, which suggests that perceived ease of use and perceived usefulness are fundamental determinants of users' attitudes toward technology, and this, in turn to intentions to use the tools [56]. Further, this result elucidates its applicability to the domain of AI technologies in recruitment [16], contributing to a deeper understanding of the factors influencing technology acceptance in organizational contexts. Hence, when recruiters perceive AI tools as user-friendly and beneficial for their daily work, they are more likely to develop positive attitudes toward these tools, ultimately increasing the likelihood of their adoption and use.

In addition, the variable "intention to use" is a crucial component in the TAM, often representing the final stage before the actual adoption and usage of technology [15] and highlights the complexity of technology adoption beyond individual perceptions of usefulness and ease of use [27]. In the context of AI tools in recruitment, this variable serves as a significant predictor of whether HR professionals will integrate these technologies into their workflows or not [28]. While TAM provides a robust foundation for understanding technology acceptance [40,41], recent findings suggest that additional factors such as ethical considerations, trust, organizational culture, and user proficiency need to be integrated into the model to more accurately predict behavioral intentions [56]. This calls for a more nuanced approach that considers both internal attitudes and external influences, ensuring that AI adoption in recruitment is not only efficient and effective but also ethical and aligned with user expectations and organizational values [19]. As AI technologies continue to evolve, adapting and extending TAM to incorporate these broader considerations will be essential for fostering responsible and sustainable technology adoption in recruitment [56].

By extending the TAM to the context of AI tools in recruitment and selection, this study broadens the theoretical application of TAM, offering a sustained model that explains how recruiters are inclined—or disinclined—to adopt these technologies [56]. Furthermore, the study establishes a foundation for future research into the nuanced mechanisms underlying AI adoption, particularly in professional settings where balancing technological efficiency with human-centered practices is paramount [11]. This alignment between theoretical validation and practical application enhances the robustness of TAM, solidifying its role as a foundational model for understanding the acceptance and integration of workplace innovations [56].

The study also extends research on AI tools by incorporating qualitative insights into the challenges and advantages recruiters associate with these technologies. This approach adds depth to our understanding of how perceptions shape technology adoption in professional contexts. Additionally, the findings contribute to the theoretical discourse on human–AI collaboration, emphasizing the dual role of AI as both an enabler and a potential disruptor [12,17,27]. Concerns such as the lack of human touch and potential biases underscore the limitations of AI tools [29], reinforcing the importance of integrating human judgment and empathy into recruitment processes [10,28,38]. These insights align with recent studies and with theories on human–computer interaction, which advocate for designing AI systems that complement, rather than replace, human capabilities [18,29,57].

Ethical concerns, such as algorithmic bias and the potential for job displacement, also emerge as critical themes [8]. These findings contribute to the theoretical exploration of the socio-ethical dimensions of AI adoption [9]. By identifying these challenges, the research supports theories advocating responsible AI usage, emphasizing the importance of ethical guidelines and organizational policies to mitigate adverse effects [8,9,12]. This perspective aligns with the ongoing discourse on ensuring the ethical deployment of AI technologies in sensitive domains like recruitment [11].

The study further enriches theoretical frameworks on resistance to change by highlighting the psychological barriers recruiters face when adopting AI tools [11]. It emphasizes the importance of trust, familiarity, and training in reducing resistance and fostering positive attitudes toward these technologies [12,17]. Addressing these barriers is critical for maximizing the benefits of AI tools while minimizing resistance among users [38].

Lastly, by integrating qualitative exploratory insights with the TAM framework, the study bridges methodological gaps and demonstrates the value of mixed method approaches for investigating complex phenomena like AI adoption. This integration provides a more comprehensive understanding of how cognitive and emotional factors, such as attitudes, influence technology acceptance [10,16,56].

6.2. Practical Implications

By elucidating the mechanisms underlying AI adoption in recruitment, the study offers meaningful implications for organizations seeking to integrate AI effectively. Hence, the findings contribute to informing strategies that enhance acceptance and optimize the benefits of AI tools while addressing potential barriers to their adoption. First, to increase usability, AI tools must feature interfaces that are intuitive and functionalities that are straightforward. User-friendly designs can significantly enhance recruiters' perceptions of these tools, making them more likely to adopt and integrate them into their workflows.

Second, emphasizing the tangible benefits of AI, such as increased efficiency and effectiveness in recruitment processes, can foster positive attitudes and drive adoption. Organizations can achieve this by showcasing case studies, conducting live demonstrations, presenting evidence-based outcomes, or implementing pilot projects where recruiters use AI tools for a defined period. Demonstrating real-world applications and advantages can build trust and enthusiasm for AI technologies.

Finally, comprehensive training programs are essential to help recruiters understand and effectively use AI tools. These programs should not only focus on the technical aspects of the tools but also highlight their practical benefits. By demonstrating how AI technologies improve recruitment outcomes, organizations can cultivate positive attitudes and increase recruiters' willingness to adopt these solutions.

By addressing these areas, organizations can create a supportive environment for AI integration, ensuring that its advantages are fully realized while fostering trust and engagement among recruiters.

6.3. Limitations and Future Directions

While this study offers valuable insights, some limitations must be acknowledged. Although the sample size of 355 respondents is substantial and consistent, it exclusively comprises recruiters from Portugal. This limits the generalizability of the findings, as the sample is not sufficiently representative of broader populations. Future research should aim to include larger and more diverse samples to enhance representativeness and allow for a more comprehensive analysis of AI adoption across different cultural and organizational contexts.

Another limitation stems from the study's exclusion of external variables, such as organizational factors, trust, or social impact, which could significantly influence the adoption of AI tools in recruitment. The absence of these variables prevents a more holistic understanding of the determinants driving AI adoption. Future studies should explore these factors to provide a more nuanced perspective on the dynamics influencing recruiters' intentions to use AI technology.

Moreover, it would be particularly interesting to investigate the motivation behind recruiters' use of AI tools. Are they adopting these technologies willingly, recognizing their

potential benefits, or are they compelled to do so by organizational mandates or protocols? Understanding these motivations could offer critical insights into the interplay between individual agencies and organizational influence in the adoption of AI tools.

Additionally, the responses from recruiters who have previously used AI tools and those who have never used them may differ significantly, introducing variability that complicates the interpretation of findings. A more homogeneous sample could have allowed for clearer conclusions.

To address these limitations, future research could adopt a longitudinal approach, focusing on a specific group of recruiters. For example, assessing their perceptions and intentions before and after engaging in a project where they actively use AI tools over a period such as one month could provide richer insights. This approach would help isolate the effects of hands-on experience with AI tools, offering a more detailed understanding of how exposure impacts recruiters' attitudes and intentions.

7. Conclusions

The results demonstrate that although AI tools have many advantages, such as increased productivity and the capacity to handle massive amounts of data, their application needs to be properly managed to take into account important elements, such as the requirement for personalization, ethical issues, and operational and technological difficulties. Instead of taking the position of human recruiters, AI should be viewed as an additional tool that strengthens its crucial function. By incorporating AI responsibly and ethically, organizations can address these challenges and maximize the advantages of AI while maintaining the essential human element in hiring—integrating automation with human empathy, engagement, and analytical thinking. Moreover, perceptions of ease of use and usefulness play a crucial role in shaping positive attitudes among recruiters, which in turn increases the likelihood of AI tool adoption.

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