Computers in Human Behavior Reports 11 (2023) 100303

Contents lists available at ScienceDirect

Computers in Human Behavior Reports

journal homepage: www.sciencedirect.com/journal/computers-in-human-behavior-reports

Applicants' perception of artificial intelligence in the recruitment process

Piotr Horodyski

ESCP Business School, Sorbonne Alliance, France

ARTICLE INFO

Keywords:
Artificial intelligence
AI
Human resources
Recruitment
Applicants' perception
TAM

ABSTRACT

The proliferation of Artificial intelligence (AI) technologies impacting entire business sectors is also transforming the field of human resources and recruitment. AI-based recruitment tools are changing the way recruitment processes are conducted. However, the perception of AI technology from the candidate's perspective has received limited coverage in the literature. Since little is known about how applicants experience AI-enabled recruitment, this paper explores their experiences and perceptions in hiring processes. The results of this study show that applicants perceive AI technology positively in hiring processes and see it as useful and easy to use. In terms of advantages, reduced response time was recognized as the most significant benefit. The lack of nuance in human judgment, low accuracy and reliability, and immature technology were identified as the biggest drawbacks of AI in recruitment.

1. Introduction

Rapid technological development has led to research focused on combining recruitment and information technology (IT). Typically, the focus has been on how to make the recruitment process smoother and optimized using IT (Galanaki et al., 2019) or on technological advances that offer a new, smart, digital context for human resource management (HRM) practices (Bondarouk & Brewster, 2016). The exponential growth of artificial intelligence (AI) technologies, transforming entire industries and organizations, has also generated much interest in human resources (HR). The recent increase in the use of AI in HR and recruitment, referred to as "the new age of HR," in which AI is transforming the recruitment industry by replacing routine tasks previously performed by human recruiters, has also led to a growing literature on this topic (Upadhyay A & Khandelwal, 2018). However, applicants' perspectives on AI in recruitment and their perception of AI tools in hiring processes do not appear to be fully explored and represent the most significant contribution of this paper in a growing body of literature on the subject. Most of the studies on AI technology in HR or, more specifically, on the impact of AI on recruitment processes conclude that the use of AI in recruitment is beneficial because the technology can be best used in this area (Frail & László, 2021). Moreover, time, effort, and repeating daily tasks are transformed into computer-driven ones, which gives recruiters enough room to focus on more important issues related to performance improvement and development (Frail & László, 2021). According to Black and van Esch (2020), recent and future advances in AI-enabled recruitment have improved recruitment efficiency and pushed AI-enabled recruitment systems from "nice to have" to "necessary" As artificial intelligence moves from the experimental stage to mainstream use in the recruitment industry, researchers are becoming more interested in the topic. This is evident in recent publications examining various aspects of AI's use in recruitment. These relate to algorithmic bias in hiring decisions from a legal and technical perspective (Hunkenschroer & Luetge, 2022), ethical perceptions, trust in companies using AI in recruitment, and applicant privacy when using AI in recruitment (Dattner et al., 2019; Figueroa-Armijos et al., 2022), adoption of AI principles (Kelley, 2022), perceptions of fairness in algorithm-driven recruitment (Lavanchy et al., 2023), the impact of AI recruitment on employer attractiveness (Weinert et al., 2020), or adoption of AI in recruitment from employers' perspectives (Pan et al., 2022).

Notwithstanding the opportunities this technology can provide, the adoption of AI in recruitment bring concerns and is not without controversy. One of the biggest challenges is the potential bias of the algorithms used. AI algorithms are only as good as the data on which they are trained, and if that data is biased, so are the algorithms (Danks & London, 2017). For example, if the data used to train an AI algorithm is heavily skewed toward male applicants, the algorithm will tend to favor male applicants in the hiring process. This was the case with Amazon's AI recruitment tool, which taught itself to favor male applicants. Amazon eventually withdrew the tool after determining that it did not provide fair results and unsuccessful attempts were made to fix this bias (Dastin, 2018). Therefore, to limit discriminatory decisions in AI recruitment, explainable AI models and methods are being developed.

E-mail address: piotr.horodyski@edu.escp.eu.

https://doi.org/10.1016/j.chbr.2023.100303
Received 25 January 2023; Received in revised form 28 May 2023; Accepted 1 June 2023
Available online 14 June 2023

For example Lee and Cha (2023) proposed the fairness, accountability, and transparency (FAT)-complexity, anxiety, and trust (CAT) model to verify and explain hiring decisions made by applied AI algorithms.

Moreover, there are growing concerns about the ethical aspects of using AI in recruitment and whether AI-powered recruitment tools are ethical and whether ethical perceptions of the use of AI in recruitment affect people's trust in the companies that use them, as AI algorithms are generally not publicly accessible due to property rights (Figueroa-Armijos et al., 2022). In addition, there are fears of displacement of human jobs by automation (Păvăloaia & Necula, 2023) and legal concerns about the final selection of applicants and hiring decisions, which in some jurisdictions still need to be made by a human (under the General Data Protection Regulation in the EU; Laurim et al., 2021). Finally, there are concerns in areas such as privacy and security. AI has the potential to collect and analyze large amounts of personal data, which raises concerns about protecting individuals' privacy rights (Stahl & Wright, 2018). Therefore, it is important for employers to carefully weigh the benefits and potential drawbacks of using AI in recruitment and ensure that any AI tools applied are fair and unbiased.

Limited research on AI in HR and even lower attention paid by scholars to the applicant's perception of AI tools used in talent acquisition and little empirical study (Hunkenschroer & Luetge, 2022) may be due to the following limitations. First, most studies focus on clear and measurable benefits of AI technology from the recruiter's or employer's perspective (summarized by Frail & László, 2021) in main categories such as money and labor savings, speed improvement, and task efficiency, relationship building between recruiters and candidates, unbiased talent search, processing a large number of resumes, or automation of recruitment processes, as they have a significant impact on transforming the entire recruitment industry (Upadhyay A & Khandelwal, 2018), and do not consider the candidate perspective. Second, the application of AI in recruitment processes or candidate perspectives on AI tools, in particular, are novel approaches. Research on these topics naturally lags behind practical applications and rapidly evolving technology (Hunkenschroer & Luetge, 2022). According to Jaser et al. (2022), using artificial intelligence in HR processes is a new and probably unstoppable trend. However, little is known about how job interviews using artificial intelligence are experienced by the different categories of applicants and how these experiences influence them.

This paper responds to a limited literature coverage of AI in HR and specifically the under-researched area of user perspectives on AI technology in recruitment processes by consulting a broad range of job seekers and users of AI tools in recruitment (552) representing 12 nationalities and working (or applying for a job) in over 20 industries aged 18 to over 55. Randomly selected and demographically-balanced participants (as presented in Table 2) answered an online questionnaire with 21 questions about their perceptions of AI tools they had experienced during the hiring processes. The results of this survey were analyzed using the technology acceptance model (TAM) proposed by Davis (1989), which is one of the most widely used theories to explain individuals' acceptance of intelligent products and services (Hirschheim, 2007; Sohn & Kwon, 2020).

Table 1
Country distribution.

Country	Respondents	%
Total	*552*	
United Kingdom	155	28.1
United States	136	24.6
Canada	80	14.5
Spain	75	13.6
France	34	6.2
Australia	22	4.0
Ireland	18	3.3
Germany	19	3.4
Poland	9	1.6
Italy	2	0.4
Portugal	1	0.2
Belgium	1	0.2

Table 2
Demographic distribution of the sample.

Characteristics	Respondents	%
Gender		
Male	266	48.2
Female	279	50.5
Other	7	1.3
Age (years)		
18–24	125	23.2
25–34	243	45.1
35–44	107	19.9
45–54	44	8.2
55+	19	3.6
Education		
High school	132	23.9
Bachelor's Degree	240	43.5
Master's Degree	137	24.8
Ph.D. or higher	15	2.7
Other (Professional qualification)	28	5.1
Employment status		
Employed Full-time	312	56.5
Employed Part-time	93	16.8
Self-Employed	39	7.1
Student	62	11.2
Seeking opportunities	40	7.2
Other (Student and employed part-time, Injured)	6	1.2
Professional experience		
Under 1 year	78	14.1
1–3 years	142	25.7
4–10 years	161	29.2
Industry		
IT, Technology	91	16.5
Healthcare	77	13.9
Science & Research	38	6.9
Finance	37	6.7
Education	32	5.8
Manufacturing	24	4.3
Publishing & Media	21	3.8
Entertainment	21	3.8
HR, services	18	3.3
Construction	17	3.1
Other (Retail, Legal, Insurance each below 3%)	176	31.9

This study contributes to the existing theories and concepts in the HR and IT literature. First, it extends the application of TAM to the field of HR and proves helpful in assessing individuals' perceptions and acceptance of new technology in HR. Second, findings based on TAM and applied to the HR field deepen the understanding of AI and its implementation in HR. Finally, results based on TAM may verify the potential and high expectations of AI recruitment technologies from the user's perspective. In addition, this research provides theoretical input and could help HR managers and software developers identify weaknesses in AI technology. It also provides guidance on how AI capabilities can be used to improve the candidate experience and customer management, which have recently been identified as one of the key issues in the recruitment industry. A better understanding of how AI tools are perceived could help HR practitioners focus on what may improve the candidate experience. The drawbacks of AI tools currently in use could help recruiters and software developers understand the limitations of these tools and identify areas for improvement. This, in turn, may support their effective adoption and optimization in hiring processes.

This paper is organized as follows. The following section explains the theoretical background for the application of AI in recruitment. The next section discusses the technology acceptance models. Then, the research objectives and research questions are presented. In the following sections, the results are outlined and discussed with theoretical and practical implications, focusing on the advantages and disadvantages of AI technology. Finally, limitations, recommendations for future research, and concluding remarks are provided.

2. Theoretical background

2.1. Online recruitment

For decades, until the mid/late 1990s, hiring practices relied heavily on traditional, non-digital methods in which human agents were the primary means of sourcing and attracting potential employees (Black & van Esch, 2020). Job applicants often physically searched job boards or printed media such as newspapers for open positions. When they found a suitable job offer, applicants had to visit the hiring company, pick up a physical application, fill it out, and send it manually to the company offering the job (Black & van Esch, 2020). The first decade of the 2000s introduced more technological advances to the staffing industry. In the last decade, technology has completely transformed the recruitment industry and led to a shift in the way candidates think. Instant access to information, increased connectivity, and workforce mobility have given candidates much more control over the hiring process (Smith, 2021). Digital platforms such as job boards and social media have enabled candidates to proactively seek job opportunities that match their skills and interests and efficiently apply for open positions online (Black & van Esch, 2020).

As new technologies have increasingly facilitated and accelerated communication and business processes between internal and external users, a new definition of web-based recruitment evolved. Online or e-recruitment is considered a part of HRM. It is defined as implementing recruitment activities involving the Internet and using web solutions that ultimately pursue the same objectives as traditional recruitment (Ghazzawi & Accoumeh, 2014). It could also be defined as the practice of using online technology, especially websites, as a means of assessing, interviewing and hiring personnel (Dhamija, 2012). The use of e-recruitment has several benefits for organizations, including increasing the size of the applicant pool and increasing the efficiency of the recruitment process (Chapman & Gödöllei, 2017, p. 213).

2.2. IT acceptance models

The study of applicant reactions has become an important topic of study in the broader field of personnel selection and assessment. As Nikolaou et al. (2019) notes, this area has become very productive for research since the mid-1980s, when the first empirical study on this subject was published by Harris and Fink (1987). According to McCarthy et al. (2017), the way applicants perceive and respond to selection tools depends on their application experiences. These include assessments of fairness, anxiety, and motivation levels, among others (McCarthy et al., 2017). A variety of determinants, including their interrelationships are theoretically and empirically explored in models of technology acceptance. Consumer adoption intention is mainly influenced by perceptions of utility (utilitarian performance expectancy) and pleasure (hedonic performance expectancy), followed by perceptions of ease of use (effort expectancy), facilitating conditions (i.e., compatibility, connectivity, and convenience), and social influence (Groβ, 2015; Sohn & Kwon, 2020). However, most studies on the use of innovative products are based on the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Planned Behavior (TPB) (Ajzen, 1985), and the Unified Theory of Acceptance and Use of Technology Acceptance (UTAUT; Venkatesh et al., 2003; Groβ, 2015). TAM is considered the most influential and widely used theory to describe the acceptance of information systems by individuals and is already very well documented in the literature (Huang & Liao, 2015; Laurim et al., 2021; Natasia et al., 2022; Tahar et al., 2020). TAM, which was adopted from the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and originally proposed by Davis (1989), assumes that individuals' acceptance of information systems is determined by two main variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). This model is also applied in the study of the perception and acceptance factors of AI-based tools in recruitment. TAM has two independent variables (usefulness and ease of use) and one dependent variable (actual system use/intention to use). An overview of the basic concept of TAM is reflected in Fig. 1.

According to Sohn and Kwon (2020) TAM has been used in studies of the acceptance of various types of information technology and is known as a robust acceptance theory (Sohn & Kwon, 2020). For example, TAM was used to explain the acceptance of business intelligence systems, intelligent tourism, smart in-store technology, the smartphone credit card, and many others (Sohn & Kwon, 2020).

2.3. Artificial intelligence in recruitment

Artificial intelligence, better known as AI, is human intelligence exhibited by machines (Siau & Yang, 2017). It means that AI tools are being developed to mimic intelligent human actions such as visual perception, speech recognition, or even phone conversations (such as AI-driven chatbots), which can make it difficult for candidates to identify whether they have experienced a human or an AI action and to reflect this appropriately in an interview or survey.

AI is one of the most innovative technologies to emerge in HR, and it can be very effective and useful, especially in recruitment (Vedapradha et al., 2019). It helps reduce or eliminate time-consuming activities, streamline and automate resume reviews, match job requirements and candidates' existing skills more efficiently and effectively, and enable timely decision-making (Vedapradha et al., 2019). In order to realize the full potential of AI in the recruitment process, any AI-based decisions/recommendations must rely on the original inputs (e.g. scope) the programmers set prior to the interaction with the potential candidate rather than have either humans or other AI tools adding inputs during the interaction phase (Jennings & Wooldridge, 1998). AI has been successfully used in visual perception, natural language processing, speech recognition, speech-to-text conversion, and other areas. Below are some AI-enabled hiring tools that have been integrated into the hiring process as identified by Vedapradha et al. (2019): Hirevue: The U.S.-based company uses video intelligence to analyze video interviews of job applicants and provide employers with more insights to make faster decisions. In support of HRM, the National Aeronautics and Space Administration (NASA) found that using AI-enhanced HR processes allowed them to complete 86% of HR tasks without human intervention (Davenport & Ronanki, 2018).

3. Exploratory research objectives

Four research objectives were formulated to investigate applicants'

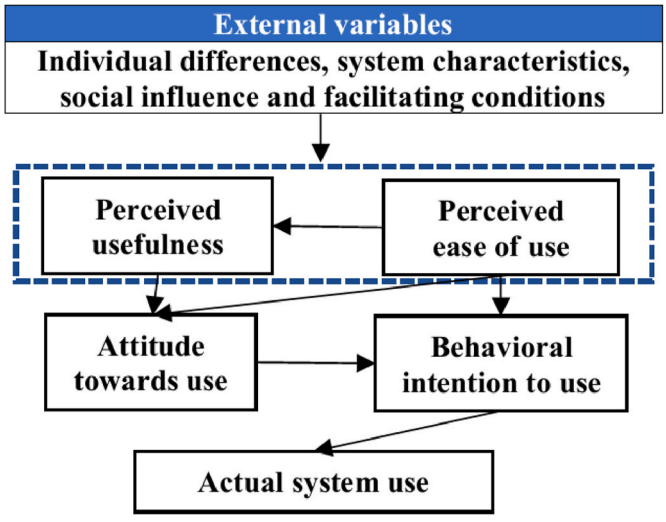

Fig. 1. TAM's theoretical framework (Libert et al., 2020) based on Davis (1989).

experiences with AI in recruitment and perceptions of this technology in hiring processes. These relate to the TAM variables' Perceived Usefulness and Perceived Ease of Use of AI recruitment tools, users' satisfaction with AI in recruitment, and participants' perceived attractiveness of companies using this technology.

The first objective of this study was to investigate the participants' perceived perception of the usefulness of AI recruitment tools. The perceived usefulness has been identified as one of the key determinants of users' intentions to use AI technology in recruitment. Therefore, this objective sought to understand how job applicants perceive the utility of AI recruitment tools and how it influences their acceptance and willingness to use AI technology in hiring. The second objective was to examine the participants' perception of the Ease of Use of AI-driven recruitment tools. Perceived Ease of Use has been identified as another critical factor affecting users' adoption of AI technology. Thus, this objective aimed to uncover the extent to which job applicants consider AI recruitment tools easy to use. The third objective was to evaluate users' satisfaction with AI tools in recruitment. This objective aimed to investigate whether job applicants are satisfied with using AI technology in recruitment. The final research objective was to assess the perceived Attractiveness of companies using AI recruitment technology from the perspective of job applicants. This objective sought to investigate whether applicants view companies utilizing AI recruitment tools more or less favorably compared to those who do not.

Overall, these four research objectives aim to better understand job applicants' experiences with AI technology in recruitment processes, their perceptions of this technology, and other factors that influence their acceptance and utilization of AI recruitment tools.

3.1. Usefulness of AI-tools in recruitment

Davis (1989) noted that among many variables that may influence system use, previous research suggests two significant determinants. People tend to use or not use an application to the extent they believe it will help them perform their job better, which is referred to as Perceived Usefulness. Perceived Usefulness relates to the likelihood of applying for a job. Perceived Usefulness strongly motivates people to use technology, and applicants may use AI to apply for jobs because it provides many benefits to the user (Chen et al., 2009). The use of AI has intrinsic values, which include the need or desire to achieve a certain goal/reward in the shortest possible time. Using technology to apply for a job must provide some level of perceived enjoyment to the potential candidate (Davis et al., 1992; Webster & Martocchio, 1992, as cited in van Esch et al., 2019b). This extrinsic motivation (e.g., personal enjoyment) influences technology use (Venkatesh, 2000, as cited in van Esch et al., 2019b). Therefore, the willingness of candidates to use AI tools in their job application process justifies using such tools in the hiring process if they find them useful. This leads to the first research question:

RQ1: Do applicants perceive the AI tools used in the hiring process as useful?

3.2. Ease of use of AI-tools in recruitment

Second, Davis (1989) suggested that even though potential users may find a particular system useful, they may simultaneously feel that the system is too difficult to use and that the performance benefits are outweighed by the effort required to use this system. Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). This follows from the definition of "ease": "freedom from difficulty or great effort." Effort is a finite resource that a person can apply to the various activities for which he or she is responsible (Radner & Rothschild, 1975, as cited in Davis, 1989). All else being equal, a system that is perceived to be easier to use than another is more likely to be accepted by users (Davis, 1989). Based on this criterion as a prerequisite for the acceptance of AI technologies, it is reasonable to assume that job candidates who assume that AI tools are easy to use would support their use in recruitment. Therefore, a second research question could be formulated as follows:

RQ2: Do job candidates believe that AI tools are easy to use in recruitment?

3.3. Satisfaction with the AI tools used in recruitment

A candidate's satisfaction with the use of AI tools in recruitment is still poorly explored in the literature, and existing research provides a mixed picture on this topic. On one hand, some studies suggest that a recruitment system that uses AI tools such as video-enabled social media negatively affects the likelihood that potential candidates will apply for jobs due to differences in computer anxiety (van Esch & Mente, 2018) or candidates need the advice of hiring experts (Johnson et al., 2009) and that the process tends to be a one-way communication system that does not allow for interaction or the opportunity to ask questions. These findings suggest that candidates may not be satisfied with the AI tools used in recruitment.

On the other hand, other studies found that candidates view AI-enabled recruiting systems as trendy and are willing to engage with and complete the recruitment process (van Esch & Black, 2019a), or that job candidates are motivated to engage with AI-enabled systems because they perceive them as novel, empowering, and convenient. The use and recognition of AI in recruitment leads candidates to perceive a company's brand as innovative (McIlvaine, 2018; Miles & McCamey, 2018). These findings suggest that users are satisfied with AI tools in recruitment. In order to investigate this discrepancy, the third research question is formulated as follows:

RQ3: Are applicants satisfied with AI tools used in recruitment?

3.4. Perceived attractiveness of the company and use of AI tools in recruitment

Perceived attractiveness, as defined by social cognitive theory, assumes that individual expectations are the primary determinants of affective outcomes (Bandura, 1978). Within this perspective Bandura (1978) identifies two different types of expectations that can influence an individual's behavior and affective responses: Outcome expectancy and self-efficacy. Outcome expectancy refers to an individual's belief that engaging in behavior will lead to a desired outcome. Self-efficacy refers to a person's belief that he or she has the necessary skills and abilities to successfully perform a particular behavior (Williamson et al., 2003). Bandura's (1982) extensive research on self-efficacy is also defined as "judgments of how well one can execute courses of action required to deal with prospective situations".

Similar to candidate's satisfaction with AI recruiting tools, recent studies provide mixed results on perceptions of a company's attractiveness in the context of AI use. The findings of Weinert et al. (2020) suggest that the use of advanced AI-based recruitment methods has a positive impact on perceived employer attractiveness (Weinert et al. (2020). In contrast, the study by Köchling et al. (2022) suggests that AI support in later stages of recruitment has a negative impact on organizational attractiveness, while the use of AI in pre-selection does not affect organizational attractiveness. To shed more light on these differentiated findings and assuming that applicants' experiences with AI tools in selection processes could also influence perceptions of the attractiveness of companies that use AI technologies in their hiring processes lead to the fourth research question:

RQ4: Does the perception of AI tools used in hiring affect a company's attractiveness?

3.5. Advantages and disadvantages of AI tools in recruitment

In addition to the formulated objectives, the advantages and disadvantages of AI tools and the experiences of the applicants are additionally investigated in order to shed light on the reasons for the expressed opinions and to obtain a more comprehensive picture. These results provide direct insights into applicants' perceptions of AI tools in recruitment.

4. Research method and data collection

Primary data collection took place in November and December 2021. Participants (N = 552) were recruited through Prolific Academic, which is the world's largest platform for online subject recruitment explicitly designed for the scientific community and proved suitable for acquiring participants for social and economic science experiments (Palan & Schitter, 2018). Prolific Academic provides attention checks to ensure that participants pay attention to the survey questions and provide accurate responses. Additionally, this platform provides researchers with real-time data monitoring and quality control features to help them detect and address any issues that may arise during their studies. According to Peer et al. (2017), compared to similar platforms, Prolific data show high internal reliability of psychometric scales, low error rates in attention tests, high reproducibility of previously known effects, and low levels of dishonest behavior among participants. In a recent study of AI in recruitment, Prolific Academic was successfully used to investigate ethical perceptions and trust in organizations (Figueroa-Armijos et al., 2022). Prolific Academic surveys have also been used in research in other fields, such as medicine (Geldsetzer, 2020), tourism (Jiang et al., 2019), or IT (Albakry et al., 2020).

The online survey method was chosen because AI technology in recruitment is only available to candidates with internet access. Online surveys have streamlined the delivery of high-value insights and made them available immediately, without post-processing or further data manipulation. Most participants were recruited from the United Kingdom (28.1%), the United States (24.6%), Canada (14.5%), and Spain (13.6%). Other countries accounted for less than 10% of the country distribution as presented in Table 1.

The detailed demographic distribution of age, education, employment status, work experience, and industry of recruited participants who experienced AI during recruitment can be found in Table 2. STATA/SE 16.1 software was used to perform statistically relevant calculations in this study.

5. Results

5.1. Theoretical implications

Results calculated using ordinary least squares linear regression on the relationship between changes in the independent variables and the dependent variable applied in the TAM model showed that Perceived Usefulness (PU) and Perceived Ease of Use (PEoU) have a statistically significant impact on Behavioral Intention (BI). BI is defined as acceptance of AI technology and willingness to use this technology in recruitment. For Perceived Usefulness, the beta coefficient (β) equals .09 ($p < .001$), which means that for each step up of the PU variable, the willingness to use AI in recruitment (BI) increases by .09 unit. Perceived Ease of Use (PEoU) is also positively related to the willingness to use AI in recruitment (ß = 0.06, $p < .01$). However, the two beta coefficients (0.09 for PU and .06 for PEoU) indicate that both predictors PU and PEoU do not have a substantial impact on BI. An R-squared of 0.13 means that PU and PEoU explain almost 13% of the intention to use AI tools in recruitment, as shown in Table 3.

The regression analysis on control variables shows that gender and education are not statistically significant in relation to the willingness to use AI in recruitment (both p-values are higher than 0.05), suggesting that there is no relationship between gender or education level and the intention to use AI in recruitment (BI). Statistically significant relationships exist between age and BI ($p < .05$) with a negative beta coefficient of −0.03, indicating that the willingness to participate in AI-driven recruitment decreases slightly (3%) with age concerning each of the five age categories (between 18 and 55) as shown Table 2.

Table 3
Linear regression results of Perceived Usefulness and Perceived Ease of Use.

Paths			Coefficient	t
Perceived Usefulness (PU)	→	Behavioral intention (BI) to use AI in recruitment	0.09***	5.59
Perceived Ease of Use (PEoU)			0.06**	3.37
Age			−0.03*	−2.14
Gender			−0.02	−0.74
Education			0.00	0.21
Number of observations = 552				
R-squared = 0.13				

Note: Coef. at significant levels: *p < .05; **p < .01; ***p < .001.

The results of the survey at PU show that 38% (207) of respondents consider AI tools useful or very useful, 32.1% (177) are neutral, and 31% (173) consider these tools useless. A slightly left-skewed distribution (with a negative skewness of −0.228) indicates the participants' slightly positive tendency toward the usefulness of AI tools in recruitment. The left-skewed distribution indicates that applicants find AI tools in recruitment useful, and it delivers a positive answer to the first research question (RQ1).

The outcome of the Perceived Ease of Use (PEoU) survey shows a clear positive perception regarding Ease of Use. 63% (350) of respondents feel that AI tools are easy or very easy to use, while only 10% (54) say the opposite. A clear left-skewed distribution (with a negative skewness of −0.598) indicates a strong positive tendency of the participants toward the perceived Ease of Use of AI tools in recruitment. It provides an affirmative answer to the second research question (RQ2).

Similar results were obtained regarding satisfaction with using AI tools in recruitment. 34% of participants were satisfied with these tools (a negative skewness of −0.15). These results indicate that candidates are satisfied with using AI tools in recruitment, which encourages their use in selection and hiring processes. This also answers the third research question (RQ3). The explanatory variable satisfaction is statistically significant in relation to willingness to use AI tools in recruitment (with $\beta = 0.11$, $p < .001$), meaning that each unit increase in satisfaction causes a 0.11 increase in willingness to use AI in recruitment. This low beta coefficient indicates a small effect of this variable on the intention to use AI in hiring. The coefficient of determination (R-squared) shows that this variable explains 11% of the variance in intention to use AI technology (R-squared = 0.13), as shown in Table 4.

Similar to the TAM variables (PU and PEoU), a regression analysis of satisfaction shows that gender and education are not statistically significant in relation to BI (both p-values are higher than 0.05), suggesting

Table 4
Linear regression results of satisfaction.

Paths			Coefficient	t
Satisfaction with the use of AI tools	→	Behavioral intention (BI) to use AI in recruitment	0.11***	7.37
Age			−0.04*	−2.29
Gender			−0.02	−0.77
Education			0.01	0.52
Number of observations = 552				
R-squared = 0.11				

Note: Coef. at significant levels: *p < .05; **p < .01; ***p < .001.

that there is no relationship between gender or education level and intention to use AI in recruitment in relation to satisfaction. There is a significant effect of age on BI ($p < .05$) concerning satisfaction (with a negative beta coefficient of −0.04), suggesting that willingness to participate in AI-assisted recruitment decreases slightly with age (4%).

As shown in Table 5, the perception of AI tools used in hiring is positively related to the perceived attractiveness of the company using these tools in recruitment ($\beta = 0.67$, $p < .001$), meaning that each unit increase in perception causes a 0.67 increase in attractiveness of the company. This high beta coefficient (0.67) indicates a strong impact of the perception of AI tools on the perceived attractiveness of the company. The coefficient of determination (R-squared) is 0.42, which means that the perception of AI tools explains 42% of the company's attractiveness using those tools in hiring. These results indicate that the perceived attractiveness of the company is positively related to applicants' perceptions of AI-enabled tools in hiring and provide a positive answer to the fourth research question (RQ4).

5.2. Practical implications based on survey findings

5.2.1. Advantages of AI technology in recruitment

Most responses supported the use of AI in recruitment. They highlighted its benefits, which can be summarized into the following categories: save time, easy to use, improve the quality and objectivity of the recruitment process, better candidates experience, and enhance the employer's brand. As the question allowed more than one response, the results presented refer to the total number of responses ($N = 552$). Most participants (69%) agreed that AI reduces response time and is fast and efficient when used correctly: "[The] process was quicker and [I] did not have to wait for a response." One of the responses acknowledged that AI could even reduce the stress associated with job interviews: "AI tools provide adequate time for preparation and reduce the pressure or anxiety associated with interviews." Almost 50% (268/552) of respondents confirmed that AI tools are easy to use, intuitive, self-explanatory, convenient and that AI technology generally "works well." One of the participants pointed out that "most of these tools are built for end-users so they tend to be streamlined from a use perspective in my experience" and "the interaction was pretty easy, it's designed to be that way". Some of them did not even notice AI in the background and for one of the candidates "it was almost the same as talking to a human". A better candidate experience was mentioned by 13.9% of respondents, who shared their view of interacting with AI agents and confirmed impressive progress in AI technology development. One of the respondents described the experience of using AI in a selection process as follows: "I found the tools to be fairly simple to use, and I found that they worked fairly well and I didn't notice a huge difference from whether it was a human or AI." A similar description was provided by a candidate who could hardly tell the difference between an AI and a human agent: "I generally like to talk to a real person. However, the AI process that I have been through is more advanced than I expected. They are able to easily understand what you are saying or typing and give accurate feedback to it." Respondents who work as HR managers or recruiters emphasized better organization of the recruiting process, an easier selection process, flexibility, help in selecting the most qualified personnel, less bias, and less likelihood of candidates being overlooked. The advantages of AI technology in this category (improving the quality and objectivity of recruitment) were mentioned by 28.4% (157 participants): "I think they're useful because they also allow for certain processes to be automated, which helps things get done faster, it can eliminate the need for in-person interviews and such". Another participant mentioned that AI matching algorithms help find the most suitable candidates: "So far the prioritization of candidates worked really well. The candidate that was on top of the list was indeed always the best match for what we were looking for." It takes a lot of time for AI algorithms to achieve the desired functionality, but once tested and calibrated, they prove very useful: "It can take some time to get what you need from the AI service but once tailored it worked very well."

The benefits associated with using AI in recruitment became more apparent during lockdowns and restrictions during the COVID-19 pandemic, which "catalyzed the development of socially-distanced alternatives" and allowed a full scope of remote interactions.

Table 5
Linear regression results of perception and attractiveness.

Paths			Coefficient	t
Perception of AI tools	→	Attractiveness of the company using AI in recruitment	0.67***	18.37
Age			−0.08*	−2.08
Gender			−0.04	−0.54
Education			−0.06	−1.57
Number of observations = 552				
R-squared = 0.42				

Note: Coef. at significant levels: *p < .05; **p < .01; ***p < .001.

5.2.2. Disadvantages of AI technology in recruitment

Survey respondents pointed out drawbacks of the current state of AI technology in recruitment that can be summarized as AI tools lack the nuances of human judgment, issues with low accuracy and reliability, immature technology, lack of transparency, ethical, legal, and privacy issues. Similar to the AI advantages, more than one answer was possible for this question.

Despite the undeniable progress in the development of AI tools and the experiences of applicants who have interacted with AI agents and found little difference from a real human, as outlined in the previous section, most respondents (67.4%) state that AI tools lack the nuances of human judgment or human touch. Participants prefer humans as interviewers: "Although they are useful, it is always a better feeling to have a person during most of you interviewing time instead of like interacting only with a "machine". Another participant explained the benefits in terms of efficiency, but pointed out the biases that arise from an automated AI recruitment process: "They can be useful for processing large numbers of applicants, but can feel very impersonal and good candidates can slip through the cracks." Issues with low accuracy and reliability were mentioned by almost a half of participants (261 responses) suggesting that AI tools are "useful for quick decisions" but "fail to take into account unique circumstances or experiences" and that "real people are often needed to answer more complicated queries."

Immature AI technology was claimed by 40% of respondents pointing out issues with spoken word or text recognition, high dependence on an internet connection, giving "silly answers as they don't detect correctly what you want to ask or do." biases in the algorithms, and not optimized for video interviews "because AI does not clearly capture or understand what is being said." Another important issue is the lack of transparency (mentioned by 34.8% participants), who shared their concerns and even fears when interacting with AI, as described by one of them: "As a candidate, I never know what the AI tool is looking for and fear that I will not be considered because I do not match what AI is searching for."

Ethical concerns, privacy implications, and legal issues do not appear to be the major drawbacks to using AI technology in recruitment. Less than half of the survey participants (38.4%) mentioned ethical issues as a drawback. Even fewer respondents cited privacy implications (29.2%) and legal issues (13.2%) as disadvantages of AI tools in recruitment. No further explanation was provided for these responses.

6. Discussion

Despite the rapid progress of AI technology in HR, which has already reached a staggering level with billions of dollars invested in developing software and calibrating algorithms to match job profiles and applicants,

there is still little information about job seekers' reactions to the AI-driven hiring process (van Esch et al., 2019b). Additionally, given a limited number of studies in the field of artificial intelligence in recruitment (Hunkenschroer & Luetge, 2022; Laurim et al., 2021; van Esch et al., 2019b), only partial reference to previous research in this area is possible.

First, a survey study by Brahmana and Brahmana (2013) in the context of e-recruitment using the TAM variables (Perceived Usefulness, Perceived Ease of Use) and extended to include perceived enjoyment found that these three variables influence applicants' decision-making and willingness to use e-recruitment technology (a basis for implementing AI technology) and concluded that "e-recruitment has to be user friendly and fun to use to attract job seekers intention." These findings are similar to the results of this study using both TAM variables and extended to sand attractiveness support the use of AI in recruitment and candidates' willingness to participate in AI recruiting processes.

Second, van Esch et al. (2019b) examined some aspects of perceptions of AI in recruitment in their study. They assumed that AI recruitment is the next technological phase in the recruitment process. They found that attitudes toward organizations using AI in the recruitment process and anxiety towards using AI significantly affect the likelihood that potential candidates complete the application process. Van Esch et al. (2019b) observed a positive effect on the relationship between motivation to use technology and the likelihood of applying for a job. The results of this study add to these findings and support the assumption that the perceived attractiveness of the company is positively related to applicants' perceptions of AI-enabled tools and satisfaction with the use of these tools in the hiring process.

Third, a qualitative study on AI acceptance in recruitment conducted by Laurim et al. (2021) found that transparency, augmentation of human capabilities, and a sense of control play critical roles in accepting AI-based technology in the hiring process. This study shows a wide range of factors that influence the acceptance of this technology in recruitment and can be considered an extension and complement of the research conducted by Laurim et al. (2021).

Furthermore, the results of this study provide a comprehensive set of advantages and disadvantages of AI technology in HR, which were not addressed in the studies mentioned above (Brahmana & Brahmana, 2013; Laurim et al., 2021; van Esch et al., 2019b). Thus, this study contributes to the literature by presenting complementary acceptance criteria for AI in recruitment, the main concerns related to this technology from the users' perspective, and finally, the current state of AI acceptance by users in recruitment. This might be a useful source of information for researchers to explore additional factors that may impact AI acceptance in HR and for practitioners to develop AI tools for recruitment further and ultimately add to the growing literature on this subject.

7. Limitations and future research

This research has several limitations. First, this study only examined applicants' perceptions of AI tools in terms of their usefulness, ease of use, satisfaction, and perceived attractiveness of companies using those tools in recruitment, which limit the generalizability to other factors that may impact the participant's perception of AI and to other technologies that might be used in HR. Second, ethical concerns, privacy implications, and legal issues related to the use of AI in hiring were not fully explored in this study. Third, the study did not examine differences between demographic profiles such as gender, nationalities, industries, or age of respondents, which could be an interesting approach for future research. In particular, the age of applicants appears to significantly influence the acceptance of AI technology and the willingness to use this technology in recruitment. Together with a significant proportion of applicants from IT/technology and healthcare industries could provide interesting aspects for further research. Finally, the participants were recruited on Prolific Academic. Despite an appropriate sample size that ensures a 99% confidence level (with a margin of error of maximum ±5%) and a balanced demographic composition, as shown in Table 2, a different candidate pool, question set, or survey platform could result in different participant responses, which in turn could further progress knowledge on AI recruitment technology. Further research could additionally shed light on how willing candidates are to use AI and other technological advances in the hiring process and how this affects their attitudes toward the hiring company and the likelihood of applying.

8. Conclusion

The results of this study indicate that applicants have a positive perception of AI technology in hiring processes. The TAM technology acceptance criteria, Perceived Usefulness, and Ease of Use influence the acceptance of AI technology and the willingness of applicants to participate in AI-driven recruitments. Similar results on users' satisfaction with AI tools in recruitment and the perceived attractiveness of companies using these tools in hiring processes further support the use of AI in HR. The advantages and disadvantages of this technology from the users' perspective also have some practical implications. Regarding benefits, about 70% of applicants mentioned reduced response time as the significant advantage, followed by ease of use, improved quality and objectivity of the hiring process, and better user experience. The major disadvantage of AI technology, also mentioned by almost 70% of respondents, concerns the AI lack of nuance in human judgment or human touch, followed by low accuracy and reliability, immature technology manifesting itself in biases in algorithms, speech/text recognition, inadequate optimization for video interviews, and lack of transparency when interacting with AI. Other drawbacks relate to ethical concerns, privacy implications, and legal issues. The identified weaknesses in the current stage of AI development could help HR practitioners and software developers improve AI tools and support their effective adoption in the HR environment.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgments

I would like to thank Prof. Sylvain Bureau (ESCP Business School), Prof. Maria Figueroa-Armijos (EDHEC Business School), and Prof. Daniela Lup (ESCP Business School) for their valuable guidance and insightful feedback. I thank my Family for supporting me in conducting this research.

References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11–39). Berlin, Heidelberg: Springer.

Albakry, S., Vaniea, K., & Wolters, M. K. (2020). What is this URL's destination? Empirical evaluation of users' URL reading. In *Proceedings of the 2020 CHI conference on human factors in computing systems* (pp. 1–12).

Bandura, A. (1978). Reflections on self-efficacy. *Advances in Behaviour Research and Therapy, 1*(4), 237–269.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122.

Black, J. S., & van Esch, P. (2020). AI-enabled recruiting: What is it and how should a manager use it? *Business Horizons, 63*, 215–226.

Bondarouk, T., & Brewster, C. (2016). Conceptualising the future of HRM and technology research. *International Journal of Human Resource Management, 27*(21), 2652–2671.

Brahmana, R. K., & Brahmana, R. (2013). What factors drive job seekers' attitude in Using e-recrutiment? *The South East Asian Journal of Management*, 123–134.

Chapman, D. S., & Gödöllei, A. F. (2017). *To attract job applicants*. The Wiley Blackwell Handbook of the Psychology of the Internet at Work, 7696.
Chen, S. C., Chen, H. H., & Chen, M. F. (2009). Determinants of satisfaction and continuance intention towards self-service technologies. *Industrial Management & Data Systems, 109*, 1248–1263.
Danks, D., & London, A. J. (2017). Algorithmic bias in autonomous systems. *Ijcai, 17* (2017), 4691–4697.
Dastin, J. (2018). Amazon scraps secret AI recruiting tool that showed bias against women. Available online: https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G. May, 2023.
Dattner, B., Chamorro-Premuzic, T., Buchband, R., & Schettler, L. (2019). The legal and ethical implications of using AI in hiring. *Harvard Business Review, 25*.
Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard Business Review, 96*(1), 108–116.
Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319–340.
Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace 1. *Journal of Applied Social Psychology, 22*(14), 1111–1132.
Dhamija, P. (2012). E-Recruitment: A roadmap towards e-human resource management. *Researchers World, 3*(3), 33.
van Esch, P., & Black, J. S. (2019a). Factors that influence new generation candidates to engage with and complete digital, AI-enabled recruiting. *Business Horizons, 62*(6), 729–739.
van Esch, P., Black, J. S., & Ferolie, J. (2019b). Marketing AI recruitment: The next phase in job application and selection. *Computers in Human Behavior, 90*, 215–222.
van Esch, P., & Mente, M. (2018). Marketing video-enabled social media as part of your e-recruitment strategy: Stop trying to be trendy. *Journal of Retailing and Consumer Services, 44*, 266–273.
Figueroa-Armijos, M., Clark, B. B., & da Motta Veiga, S. P. (2022). Ethical perceptions of AI in hiring and organizational trust: The role of performance expectancy and social influence. *Journal of Business Ethics*, 1–19.
Fishbein, M., & Ajzen, I. (1975). *Beliefs, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
Frail, J., & László, V. (2021). A literature review: Artificial intelligence impact on the recruitment process. *International Journal of Engineering and Management Sciences, 6* (1), 108–119.
Galanaki, E., Lazazzara, A., & Parry, E. (2019). A cross-national analysis of e-HRM configurations: Integrating the information technology and HRM perspectives. In *Organizing for digital innovation* (pp. 261–276). Cham: Springer.
Geldsetzer, P. (2020). Use of rapid online surveys to assess people's perceptions during infectious disease outbreaks: A cross-sectional survey on COVID-19. *Journal of Medical Internet Research, 22*(4), Article e18790.
Ghazzawi, K., & Accoumeh, A. (2014). Critical success factors of the e-recruitment system. *Journal of Human Resources Management and Labor Studies, 2*(2), 159–170.
Groß, M. (2015). Mobile shopping: A classification framework and literature review. *International Journal of Retail & Distribution Management, 43*(3), 221–241.
Harris, M. M., & Fink, L. S. (1987). A field study of applicant reactions to employment opportunities: Does the recruiter make a difference? *Personnel Psychology, 40*(4), 765–784.
Hirschheim, R. (2007). Introduction to the special issue on" quo vadis TAM-issues and reflections on technology acceptance research". *Journal of the Association for Information Systems, 8*(4), 9.
Huang, T. L., & Liao, S. (2015). A model of acceptance of augmented-reality interactive technology: The moderating role of cognitive innovativeness. *Electronic Commerce Research, 15*(2), 269–295.
Hunkenschroer, A. L., & Luetge, C. (2022). Ethics of AI-enabled recruiting and selection: A review and research agenda. *Journal of Business Ethics, 178*(4), 977–1007.
Jaser, Z., Petrakaki, D., Starr, R., & Oyarbide-Magaña, E. (2022, January 27). *Where automated job interviews fall short*. Harvard Business Review. https://hbr.org/2022/01/where-automated-job-interviews-fall-short.
Jennings, N. R., & Wooldridge, M. (1998). Applications of intelligent agents. In *Agent technology* (pp. 3–28). Berlin, Heidelberg: Springer.
Jiang, Y., Balaji, M. S., & Jha, S. (2019). Together we tango: Value facilitation and customer participation in Airbnb. *International Journal of Hospitality Management, 82*, 169–180.
Johnson, R. D., Gueutal, H., & Falbe, C. M. (2009). Technology, trainees, metacognitive activity and e-learning effectiveness. *Journal of Managerial Psychology, 24*(6), 545–566.
Kelley, S. (2022). Employee perceptions of the effective adoption of AI principles. *Journal of Business Ethics, 178*(4), 871–893.
Köchling, A., Wehner, M. C., & Warkocz, J. (2022). Can I show my skills? Affective responses to artificial intelligence in the recruitment process. *Review of Managerial Science*, 1–30.
Laurim, V., Arpaci, S., Prommegger, B., & Krcmar, H. (2021). Computer, whom should I hire?–acceptance criteria for artificial intelligence in the recruitment process. In *Proceedings of the 54th Hawaii international conference on system sciences* (p. 5495).
Lavanchy, M., Reichert, P., Narayanan, J., & Savani, K. (2023). Applicants' fairness perceptions of algorithm-driven hiring procedures. *Journal of Business Ethics*, 1–26.
Lee, C., & Cha, K. (2023). FAT-CAT—explainability and augmentation for an AI system: A case study on AI recruitment-system adoption. *International Journal of Human-Computer Studies, 171*, Article 102976.
Libert, K., Mosconi, E., & Cadieux, N. (2020). Human-machine interaction and human resource management perspective for collaborative robotics implementation and adoption. In *Proceedings of the 53rd Hawaii international conference on system sciences*.
McCarthy, J. M., Bauer, T. N., Truxillo, D. M., Anderson, N. R., Costa, A. C., & Ahmed, S. M. (2017). Applicant perspectives during selection: A review addressing "so what?, „what's new?," and "where to next?". *Journal of Management, 43*(6), 1695.
McIlvaine, A. (2018). Data in the driver's seat. Human Resource Executive. https://hrexecutive.com/talentacquisitions-leaders-use-ai-to-improve-hiring/. URL:.
Miles, S. J., & McCamey, R. (2018). The candidate experience: Is it damaging your employer brand? *Business Horizons, 61*(5), 755–764.
Natasia, S. R., Wiranti, Y. T., & Parastika, A. (2022). Acceptance analysis of NUADU as e-learning platform using the Technology Acceptance Model (TAM) approach. *Procedia Computer Science, 197*, 512–520.
Nikolaou, I., Georgiou, K., Bauer, T. N., & Truxillo, D. M. (2019). Applicant reactions in employee recruitment and selection: The role of technology. In R. N. Landers (Ed.), *The Cambridge handbook of technology and employee behavior* (p. 100). Cambridge University Press.
Palan, S., & Schitter, C. (2018). Prolific. ac—a subject pool for online experiments. *Journal of Behavioral and Experimental Finance, 17*, 22–27.
Pan, Y., Froese, F., Liu, N., Hu, Y., & Ye, M. (2022). The adoption of artificial intelligence in employee recruitment: The influence of contextual factors. *International Journal of Human Resource Management, 33*(6), 1125–1147.
Păvăloaia, V. D., & Necula, S. C. (2023). Artificial intelligence as a disruptive technology—a systematic literature review. *Electronics, 12*(5), 1102.
Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology, 70*, 153–163.
Radner, R., & Rothschild, M. (1975). On the allocation of effort. *Journal of Economic Theory, 10*(3), 358–376.
Siau, K., & Yang, Y. (2017). Impact of artificial intelligence, robotics, and machine learning on sales and marketing. In *Twelve annual midwest association for information systems conference* (pp. 18–19). MWAIS 2017.
Smith, A. (2021). 8 trends that altered the recruitment industry forever. https://recruitee.com/articles/recruitment-industry. URL:.
Sohn, K., & Kwon, O. (2020). Technology acceptance theories and factors influencing artificial Intelligence-based intelligent products. *Telematics and Informatics, 47*, Article 101324.
Stahl, B. C., & Wright, D. (2018). Ethics and privacy in AI and big data: Implementing responsible research and innovation. *IEEE Security & Privacy, 16*(3), 26–33.
Tahar, A., Riyadh, H. A., Sofyani, H., & Purnomo, W. E. (2020). Perceived ease of use, perceived usefulness, perceived security and intention to use e-filing: The role of technology readiness. *The Journal of Asian Finance, Economics, and Business, 7*(9), 537–547.
Upadhyay A, K., & Khandelwal, K. (2018). Applying artificial intelligence: Implications for recruitment. *Strategic HR Review, 17*(5), 255–258.
Vedapradha, R., Hariharan, R., & Shivakami, R. (2019). Artificial intelligence: A technological prototype in recruitment. *Journal of Service Science and Management, 12*(3), 382.
Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342–365.
Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.
Webster, J., & Martocchio, J. J. (1992). Microcomputer playfulness: Development of a measure with workplace implications. *MIS Quarterly*, 201–226.
Weinert, S., Günther, E., Rüger-Muck, E., & Raab, G. (2020). Artificial intelligence in personnel selection and its influence on employer attractiveness. *Marketing Science & Inspirations, 15*(3), 22–35.
Williamson, I. O., Lepak, D. P., & King, J. (2003). The effect of company recruitment web site orientation on individuals' perceptions of organizational attractiveness. *Journal of Vocational Behavior, 63*(2), 242–263.