

Digital Recruitment: An Analysis of Emerging Trends and Innovative Practices

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Abstract

The digitalization of recruitment has profoundly reshaped talent acquisition practices through the adoption of tools such as job boards, social media, artificial intelligence, and gamified assessments. This study, based on data from 136 recruiters, highlights significant impacts: 88.9% of respondents reported that digital tools enhance the efficiency of the recruitment process, and chi-square tests confirmed statistically significant correlations between tool usage and hiring quality. Job boards, AI, and social media platforms are perceived as particularly effective in improving speed, candidate reach, and screening accuracy. However, the findings also reveal persistent challenges, including algorithmic bias, depersonalization of candidate experience, and unequal access to digital infrastructure. The study concludes that digital recruitment should be approached as an evolving ecosystem requiring a balanced integration of technological innovation and human judgment.

Keywords: E-recruitment, Digitalization, Information Technology, Job Boards, SocialMedia, Artificial Intelligence, Gamification.

Classification JEL: J63, M51, O33

Paper type: Empirical research

Résumé :

La digitalisation du recrutement a profondément transformé les pratiques d'acquisition de talents, notamment par l'intégration d'outils tels que les job boards, les réseaux sociaux, l'intelligence artificielle et les évaluations gamifiées. Cette étude, menée auprès de 136 recruteurs, met en évidence des impacts significatifs : 88,9 % estiment que les outils digitaux améliorent l'efficacité du processus de recrutement, et les tests du khi-deux révèlent des corrélations statistiquement significatives entre l'utilisation de ces outils et la qualité des recrutements. En particulier, les job boards, l'IA et les réseaux sociaux sont perçus comme très efficaces pour améliorer la rapidité, la portée et la précision du tri des candidats. Toutefois, les résultats soulignent également des tensions persistantes, notamment liées aux biais algorithmiques, à la déshumanisation de l'expérience candidat et aux inégalités d'accès aux outils numériques. L'étude conclut que le recrutement digital doit être envisagé comme un écosystème évolutif nécessitant un équilibre entre innovation technologique et jugement humain.

Mots-clés : E-recrutement, Digitalisation, Technologies de l'information, Sites d'emploi, Réseaux sociaux, Intelligence artificielle, Gamification.

Classification JEL : J63, M51, O33

Type du papier : Recherche Empirique

1. Introduction

Today, digital transformation has radically changed the way human resources management is perceived, and recruitment is unable to skip this dynamic. The digital technologies boom, accelerated by the generalization of remote work as well as the effects of the sanitary crisis related to Covid-19, has significantly shifted the traditional selection of talents across the globe. Companies now focus more on online platforms, digital testing and AI based solutions to attract and evaluate candidates. While these evolutions offer efficient and rationalized perspectives, they may also raise essential questions regarding equity, transparency and the quality of experience which candidates go through.

Several studies have focused on this digital shift. The study that was carried out by Melanthiou et al. (2015) has shown the growing importance of professional social networks in the sourcing of candidates, while Lievens & Chapman (2019) have focused on the value of rapidity and productivity linked to E-recruitment. Chamorro-Premuzic et al. (2016), warned about the risks carried by the algorithmic biases as well the lack of transparency inherent in the use of AI within the framework of the selection processes. More recently, Landers et al. (2021) have discovered that Gamification - that is to say, the integration of recreational mechanisms within testing devices - could strengthen the candidates' engagement and enhance the relevance of tests. These contributions shed some light on contemporary challenges facing digital recruitment. However, they often remain centered around western contexts, leaving aside environments such as Morocco.

In the emerging countries, and particularly in Morocco, empirical studies remain scarce. Yet, the job market there is marked by a strong competition among candidates, a connected graduated youth and companies bound to the urge of optimising their selection processes. Hence, analyzing the digitalization of recruitment within this context seems necessary to understand its real impact and specific limitations.

Two concepts warrant clarification at the outset of the introduction. On the one hand, **recruitment digitalization** designates the integration of digital tools during the whole process, as well as posting the offer, all the way to the integration of new employees, going through preliminary algorithmic selection of candidates. On the other hand, **gamified testing**, corresponds to the use of complex, interactive or simulated games, in order to evaluate the candidates' competencies and behaviours. These tools are distinguished by their immersive dimension and their capacity to enrich the candidate's experience, while they also provide the recruiter with more precise data.

This study is led through a double logic. On a theoretical level, it aims to combine the literature contributions on E-recruitment and the gamification which is applied to human resources, in order to propose a wholesome reading of its practices. On an empirical level, it is based on a survey conducted among recruiters to analyze their perceptions of digital tools and to measure their actual effectiveness.

This study seeks to answer the following question: **in what measure do digitalization and innovative practices, such as gamification, transform recruitment and what effects do they have on efficiency, equity and satisfaction ?**

In order to answer that, this study is deployed into 3 steps. The first rests into the existing body of work to highlight the achievements and limitations of the literature. The second presents the adopted methodology and collected data. Lastly, the third discusses the obtained results and puts into perspective their managerial, social and ethical implications.

2. Theoretical Framework

2.1 The Concept of E-Recruitment

Nowadays, digital transformation becomes a central leverage of modernisation of human resources management practices. In the field of recruitment, it manifests itself by the developing adoption of online platforms, HR analytical tools and AI solutions that allow to rationalise the selection of candidates and accelerate the decision-making process (Bondarouk & Brewster, 2016 ; Parry & Battista, 2019).

While these evolutions are well documented in the western contexts, they leave much to be explored in the framework of emerging countries. In Morocco for instance, recent statistics carried out by Haut-Commissariat au Plan confirm a significant reform in the job market, which is marked by a surge of young graduated candidates who are well connected as well as the companies' need to optimize their selection processes. The first local studies in this sense suggest that the companies' digital maturity and the use of HR analytical tools boost the quality of recruitment and the perceived process performance. (Zidane, 2025 ; Zhu, 2023)

E-recruitment, is known as electronic recruitment or online recruitment, refers to the application of internet-based technologies in executing various stages of the hiring process, including job posting, sourcing, screening, selecting, and onboarding candidates. It represents a paradigm shift from traditional recruitment methods to a more digitized, interactive, and efficient approach. According to Ruel et al. (2004), e-HRM systems—including e-recruitment platforms—serve to digitalize core human resource functions, offering enhanced transparency, accessibility, and cost savings. These systems allow HR managers to manage talent acquisition activities more strategically by automating repetitive tasks and enabling real-time data processing. Similarly, Lengnick-Hall and Moritz (2003) note that e-recruitment systems offer organizations a competitive edge by improving speed and accuracy in talent sourcing.

Pavitra Dhamija (2012) emphasizes the pivotal role of digital tools such as job portals, applicant tracking systems (ATS), online testing interfaces, and career microsites in improving recruitment efficiency. These platforms not only streamline administrative procedures but also provide data analytics capabilities for better decision-making. Okolie and Irabor (2017) further assert that the global shift toward e-recruitment is driven by key benefits such as reduced cost-per-hire, faster turnaround times, and access to a wider and more diverse talent pool. However, they also highlight persistent challenges, including unequal access to digital infrastructure in developing regions, lack of user training, and organizational resistance to change.

The evolution of e-recruitment has been shaped by advances in web 2.0 technologies, enabling greater interactivity between recruiters and candidates. Bhupendra and Swati (2015) explain that this technological shift has allowed recruiters to not only advertise job openings but also engage in two-way communication, personalize the recruitment journey, and build long-term relationships with candidates. The transition from passive job advertisement to active candidate engagement marks a significant milestone in recruitment strategy. Holm et al. (2014) propose a structured framework for understanding e-recruitment, dividing the process into three key stages: (1) attraction, (2) screening, and (3) engagement—all of which benefit from digital tools and automation. Okolie and Irabor (2017) stress that successful e-recruitment is not merely about automation but also about strategic alignment with broader organizational objectives.

2.2 Social Media as a Recruitment Tool

Social media platforms have become integral to modern recruitment practices, profoundly transforming how organizations attract, engage, and evaluate talent. While social media platforms were originally established for social engagement, they are now being applied as intentional recruitment tools because of their accessibility, interactive and participatory nature, and because they engage both active and passive job candidates. Safko and Brake (2009), define

social media as - "a web-based conversational environment where individuals can create, share, and view content through multiple methods across many platforms (ex. - written, video, and picture)." Because they are interactive and participatory, social media is a great medium/tool to build a community, establish connections, and enhance employer visibility among social networks and communities, which are all necessary for recruitment today. Brian Solis (2017), describes these social sites as changing the traditional one-way communication into a dialogue and conversation between the organization and the candidate, which is essential in developing "candidate relationship management (CRM)" as people move through the traditional application phase. Glassdoor (2019), found that approximately 79% of job seekers will utilize social media to assist in their job search, demonstrating that organizations need to be authentic and appealing to be relevant socially. Berber et al. (2018) claim organizations can extract an immense amount of information about candidates, that likely wouldn't be available from traditional means, from platforms such as LinkedIn, Facebook, Twitter, and Instagram. Hosain and Liu (2020), report five major roles/functions of social media in recruitment; employer branding, passive candidate sourcing, talent pipeline, cultural fit, and recruitment acceleration. LinkedIn has developed into the dominant option for utilizing a professional network and recruiting. Digital Discovery (2022) identified over 4.1 million active users in Morocco alone. Despite LinkedIn's popularity, ethical considerations still exist. Davison et al. (2011) warn that especially when candidates are evaluated based on their informal or personal information, it can introduce bias. They recommend the professional, fair, and dignified use of social data within the context of recruitment processes.

Job boards (or job-sharing sites) constitute one of the earliest, oldest forms of an e-recruiting system. Job boards function as the virtual exchange (marketplace) whereby employers share job postings and job seekers apply or share resumes. They functionally emerged in the United States in the early 1990s, and became an integral part of a digital approach to talent attraction. Shenoy and Aithal (2018) refer to job boards as communication/marketing strategies aimed at greater outreach and visibility for the organization, while Okolie and Irabor (2017) cite numerous advantages of job board including low-cost, access to larger applicant pools, and prompt up-to-date posting systems. However, despite job board opportunities, Peltokorpi (2021) reports that job boards remain underutilized, particularly by small and medium-sized enterprises.

H1. Social media has a significant positive impact on recruitment.

2.3 The Role of Job Boards

Job boards are among the earliest and most enduring components of e-recruitment systems. They serve as virtual marketplaces where employers post vacancies and job seekers submit applications or upload résumés. Originating in the United States in the early 1990s, job boards have since become integral to digital talent acquisition strategies. Shenoy and Aithal (2018) define job boards as strategic channels for expanding organizational reach and improving visibility. Okolie and Irabor (2017) argue that job boards offer significant advantages in terms of cost-effectiveness, accessibility, and real-time updates. However, despite their potential, Peltokorpi (2021) notes that job boards remain underutilized, particularly among small and medium-sized enterprises.

Bonet et al. (2013) and Parry & Wilson (2009) claim that while job boards can help people narrow down choices based on search engine ranking and design features, job seekers typically utilize job boards to find opportunity postings. Brenčič (2014) argues that job boards work best if they are incorporated into a recruitment strategy that draws on ATS, employer branding, and candidate engagement. Advancements in technology have also brought about niche board and AI-specific boards to enhance job board experiences with automated matching algorithms. However, challenges remain common on job boards with job postings being outdated, employer

ratings being minimal, and inconsistencies with filters. Hence, one needs to recognize that job boards are most effective when strategically incorporated, content managed regularly, and at the same time aligned with eighteen broader goals of HRM in the management of talent potential of job seekers.

H2. Job boards have a significant positive impact on recruitment.

2.4 Artificial Intelligence in Recruitment

Recent literature highlights the developing role of AI within recruitment practices. Systematic reviews that were published in 2025 underline that AI permits to automate some repetitive tasks, reinforce the selection precision and sustain decisions based on data. (Mori, 2025; Dadaboyev, 2025). However, these contributions are nuanced by the challenges of validity and transparency that necessitates a strict governance and human supervision. The promise of more efficient recruitment should not overshadow the risk of discriminatory bias linked to the training data and the algorithms used. (Trautwein, 2025; Soleimani, 2025).

Artificial Intelligence (AI) has emerged as one of the most significant changes to the recruitment landscape we have seen. It enables automation, personalization, and predictive analytics throughout the hiring lifecycle, from sourcing to selection. Tay et al. (2024) identify the four main AI functions in recruitment as: automated sourcing and screening, chatbot engagement, predictive analytics, and workflow optimization. According to Delaye (2019) utilization of AI tools reduces time-to-hire and increases consistency throughout the recruitment process, especially during the initial screening phase. Van Esch and Black (2019) have found that AI technologies can assess resumes, rank video interviews, and even predict potential job performance. It is important to recognize, though, that risks exist. Bendick and Nunes (2012) and Raghavan et al. (2020) identify algorithmic bias and lack of transparency in processes which can contribute to negative outcomes. Tay et al. (2024) identify four main enablers for the adoption of AI: perceived benefit, organizational readiness, regulatory support, and technology infrastructure. Hybrid models, in which AI supports, but does not replace, human judgment, are recommended to balance efficiency and fairness.

H3. Artificial Intelligence (AI) has a significant positive impact on recruitment.

2.5 Gamification and candidates' new forms of assessment

The gamification of assessment methods is emerging as a growing trend. It is defined as the integration of game mechanics into non-game contexts, specifically in psychometric tests and professional simulations. Recent studies show that gamified assessments generate more favorable reactions from candidates and demonstrate encouraging construct validity indicators, both regarding cognitive abilities and personality traits. (Nikolaou et al., 2024; Schmidtnr et al., 2025). These findings confirm that gamification can help enhance applicants' experience, but they also require further validation to ensure the psychometric robustness of the tools. (Gazit et al., 2025).

Gamification refers to the application of game mechanics in non-game contexts to enhance user motivation and engagement. In recruitment, gamification transforms candidate assessment into a dynamic and interactive experience. Deterding et al. (2011) describe gamified assessments as tools that use challenges, scoring, and feedback to evaluate problem-solving, cognitive ability, and technical skills. Recruiters now have the opportunity to observe how candidates write code, solve bugs, or optimize algorithms during real-time simulations in coding games. Such tools provide deeper insights than resumes, capturing behavioral and cognitive dimensions. As reported by Michael Page Technology (2021), gamified assessments are particularly beneficial for tech roles and for early career recruitment. Okolie and Irabor (2017) further explain that these tools alleviate candidate stress, enhance employer branding, and bolster objectivity. On the flip-side, some poorly structured assessments may frustrate users by failing to accurately

represent the nuances of the job. There is also the challenge of ensuring accessibility and equality of participation.

However, the surge of AI and gamification raises ethical, social, and organizational questions. Several authors emphasize the risks of indirect discrimination, lack of transparency, and loss of candidates' trust when they are confronted with opaque systems. (Chamorro-Premuzic et al., 2016; Krick et al., 2025). The literature then recommends the implementation of audit mechanisms, fairness metrics, and clear communication with candidates in order to preserve equity and strengthen the acceptability of these tools. (Soleimani, 2025; Trautwein, 2025). These concerns are particularly sensitive in emerging contexts such as Morocco, where information asymmetries in the labor market remain strong and where trust in recruitment processes is a crucial issue for employer branding (Zhu, 2023; Zidane, 2025).

H4. Gamified assessments have a significant positive impact on recruitment.

2.6 Candidate Experience in the Digital Age

The candidate experience encompasses all touchpoints an applicant encounters during the recruitment journey, from job search to onboarding. As competition for talent intensifies, delivering a positive and engaging candidate experience has become a strategic priority.

Solus and Engel (2017) argue that digital tools—such as automated messaging, real-time updates, and self-service application portals—improve transparency, responsiveness, and convenience. Digital Recruiters (2020) report that enhanced candidate experience contributes to stronger employer branding, higher application rates, and better talent retention.

However, digitalization also poses risks of over-automation, which may reduce human warmth or fail to accommodate candidate-specific needs. Thus, balancing automation with empathy and personalization remains a key challenge for digital recruitment strategies.

3. Methodology

3.1 Study's field work & data

This study adopts a positivist paradigm and follows a hypothetico-deductive approach to examine the influence of digitalization on recruitment processes. To address the research question, a quantitative empirical strategy was deployed, complemented by limited qualitative inputs to provide contextual depth. A structured questionnaire comprising 31 closed-ended and multiple-choice questions—alongside a few open-ended items—was designed and distributed via Google Forms. The instrument was divided into three thematic sections reflecting tool usage, perceived effectiveness, and impact on the candidate experience. The survey targeted HR professionals actively engaged in recruitment activities. With the collaboration of the communication department, the questionnaire was emailed to 175 recruiters via the Outlook system. A total of 136 complete responses were received, yielding a high response rate of 78%.

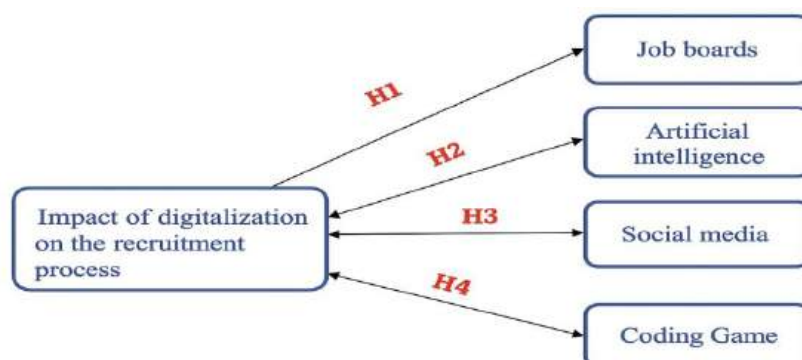
3.2 research framework

The suggested research framework is mainly based on the literature reviews and the formulated hypotheses. It stipulates that the adoption of digital tools has a positive influence on the performance of the recruitment process. Four direct relationships are formulated in the form of hypotheses:

- **H1:** The use of job boards has a positive impact on the effectiveness of the recruitment process.
- **H2:** The adoption of artificial intelligence improves the quality and speed of recruitment.
- **H3:** The use of social networks contributes positively to the attractiveness and visibility of job offers.

- **H4:** The use of gamified assessments strengthens candidate engagement and the relevance of the selection process.

The following conceptual framework and research hypothesis can be drawn from the above literature review.



3.3 data processing

The Data collected were exported to Excel and analyzed using SPHINX software. The analysis followed a two-tiered strategy. Descriptive statistics (univariate analysis) were used to establish frequency distributions and characterize respondent profiles and response trends; Inferential statistics, specifically chi-square tests of independence (cross-tabulations), were employed to assess the relationships between the dependent variable (perceived impact of digital tools on recruitment) and explanatory variables (e.g., job board usage, AI adoption, social media integration).

4. Results

The results of this study are presented in two main sections: a descriptive statistical analysis and an inferential analysis based on chi-square tests. Together, these findings provide robust insights into the perceived and observed impact of digital tools on various dimensions of the recruitment process.

4.1 Descriptive Analysis

- **Demographic Profile of Respondents**

The sample includes 136 recruiters. The gender distribution shows a majority of female respondents (61.1%), while 38.9% are male. The majority of participants (72.2%) are between 25 and 35 years old. Regarding educational background, 91.7% hold a master's degree or higher. In terms of professional experience, 63.9% have between 2 to 4 years of experience in recruitment.

Table 1 – Characteristics of the Sample Population

Gender	Years of Experience	Age Group	Educational Background
Female: 61.1%	Less than 2 years: 22.2%	Between 18 and 25 years: 22.2%	Master's degree (BAC+5): 27.8%
Male: 38.9%	Between 2 and 4 years: 63.9%	Between 25 and 35 years: 72.2%	Doctorate (PhD): 8.3%
	Between 4 and 6 years: 13.9%	Between 35 and 45 years: 5.6%	

Source: Compiled by the authors based on the data collected in the present study.

- **Organizational and Sectoral Characteristics**

Most respondents work in large organizations, with 36.1% employed in companies with more than 500 employees. Additionally, 33.3% work in companies with fewer than 100 employees,

16.7% in firms with 100 to 300 employees, and 13.9% in companies with 300 to 500 employees. In terms of sector distribution, the IT sector dominates with 66.7%, followed by the commercial sector (13.9%), financial sector (11.1%), industrial sector (5.6%), and healthcare sector (2.8%). This distribution reflects a strong presence of the IT industry within the sample, while also capturing diversity across other sectors.

Table 2 – Company Size of Respondents’ Organizations

Company Size	No. of Respondents	Frequency
Fewer than 100 employees	45	33.30%
100 – 300 employees	23	16.70%
300 – 500 employees	19	13.90%
500 and more	49	36.10%
Total	136	100%

Source: Compiled by the authors based on the data collected in the present study.

• **Recruitment Target Profiles**

The data reveals that recruitment efforts are primarily focused on IT and development-related roles. Specifically, 69.4% of recruiters indicated targeting profiles such as web engineers, data specialists, BI analysts, and AI professionals, which are in constant demand. In contrast, 16.7% of respondents focus on commercial profiles, 8.3% on finance and accounting roles, and 2.8% on technical or pharmaceutical positions. These results underscore the dominance of IT-related recruitment while highlighting the continued relevance of other profiles.

Table 3 – Sector of Activity of Respondents

Sector of Activity	No. of Respondents	Frequency
Information Technology (IT)	91	66.70%
Finance	15	11.10%
Industry	8	5.60%
Commerce	19	13.90%
Healthcare	4	2.80%
Other	0	0.00%
TOTAL	136	100%

Source: Compiled by the authors based on the data collected in the present study.

4.2 Usage and Perception of Digital Tools

Digital recruitment tools are increasingly integrated into hiring strategies. This section examines both the extent of their use and the perceptions recruiters have of their effectiveness, efficiency, and impact on candidate experience.

• **Job Boards**

A large share of recruiters (63.9%) rate job boards as highly effective for reaching a broad candidate pool. These platforms are especially useful for entry- to mid-level roles and increase the visibility of job postings across regions.

Additionally, 25% of respondents mentioned operational gains, such as shorter hiring cycles and better applicant tracking. Some also emphasized that outcomes improve significantly when job boards are used strategically—with analytics, keyword optimization, and audience targeting.

- **Social Media**

Social media platforms, especially LinkedIn, are widely adopted by recruiters. 88.9% of respondents confirm its value in sourcing and engaging candidates. It serves as both a talent database and a brand-building tool, enhancing employer visibility.

Recruiters also use social networks to identify passive candidates, gauge soft skills, and initiate informal contact. Professional platforms like LinkedIn are particularly suited for targeting mid- to senior-level talent.

- **Artificial Intelligence (AI)**

AI-powered tools are used by 80.6% of recruiters in the sample. These include chatbots, resume screening tools, and predictive algorithms that streamline candidate evaluation and reduce manual workload.

Nonetheless, 19.4% of respondents expressed concerns about algorithmic bias and fairness in AI decisions—highlighting the need for transparency and ethical standards in digital recruitment.

- **Gamified Assessments**

58.3% of recruiters use gamified assessments such as coding games or simulations to evaluate skills dynamically. These tools help assess problem-solving, technical ability, and adaptability in real-time, while improving candidate engagement and reducing test-related stress.

Some recruiters, however, called for better alignment with job requirements and more standardized scoring systems to ensure objective decision-making.

- **Candidate Experience**

Recruiters reported that **digital tools improve candidate experience** in several ways. **29.2%** noted broader access to talent, particularly for remote or international hiring. Another **20.8%** mentioned improved communication through automated updates and faster responses.

Table 4 – Summary of Usage and Perception of Digital Recruitment

Digital Tool	Usage Rate	Perceived Benefits	Challenges or Concerns
Job Boards	63.9% (87 recruiters)	Wide candidate reach, visibility, reduced time-to-hire, enhanced applicant tracking	Requires active management (SEO, targeting, analytics)
Social Media	88.9% (121 recruiters)	Talent sourcing, employer branding, access to passive candidates	Informal nature may risk subjectivity or bias
Artificial Intelligence (AI)	80.6% (110 recruiters)	Faster screening, reduced manual workload, predictive analysis	19.4% express concerns about algorithmic bias and fairness
Gamified Assessments	58.3% (79 recruiters)	Real-time skill evaluation, improved candidate engagement	Needs better alignment with job needs and standardized evaluation
Candidate Experience	—	29.2%: broader reach (esp. remote/international), 20.8%: faster, clearer communication	Risk of over-automation reducing personal touch

Source: Author's survey based on 136 recruiters. Usage rates and perceptions are based on quantitative and qualitative feedback collected through structured questionnaires.

4.3 Inferential Analysis: Chi-square Tests

This section explores the relationship between the use of digital tools and their perceived effectiveness in recruitment, using chi-square tests to determine statistical significance.

4.3.1 Overview of the Chi-square Methodology

The chi-square test evaluates whether there is a statistically significant association between two categorical variables—here, the use of a digital tool and its impact on recruitment.

- If $p < 0.05$, the hypothesis is accepted (significant association).
- If $p > 0.05$, the null hypothesis is accepted (no significant association).

4.3.2 Detailed Results by Hypothesis

- **H1: Job Boards**

The cross-tabulation results indicate that a substantial majority of the 136 surveyed recruiters (approximately 87%) report that job boards have a highly positive impact on the recruitment process. These platforms are viewed as essential tools for posting job offers, attracting a broad pool of applicants, and quickly disseminating opportunities across a wide range of channels. One of the main advantages highlighted by recruiters is speed and operational efficiency. Job boards automate some of the initial stages of the search process, significantly reducing the length of recruitment cycles. Respondents indicate that the use of filters, keywords and integrated analytical tools makes it possible to quickly identify relevant profiles, which helps to optimise the pre-selection phase.

A second advantage highlighted is cost reduction. Compared to traditional methods such as press or external communication campaigns, job boards offer a more affordable alternative while ensuring greater visibility. Recruiters say that the cost/benefit ratio is particularly attractive, especially for junior or mid-level positions, where demand is high and application volumes are significant.

Finally, respondents emphasise the ability to broaden access to talent. Job boards make it possible to reach a diverse pool of candidates, including recent graduates and those at the start of their careers. This broader access facilitates the creation of a more varied database of profiles and increases the chances of finding a candidate who meets the requirements of the position.

Table 5 – Evaluation of Job Boards' Effectiveness in Digital Recruitment

Perceived Effectiveness	Very Effective	Effective	Not Very Effective	Not Effective at All	TOTAL
Yes	87	30	10	3	130
No	0	6	0	0	6
TOTAL	87	36	10	3	136

Source: Compiled by the authors based on the data collected in the present study

The dependency is significant. $\chi^2 = 14.09$, $df = 1$, $1-p = 0.01$

The chi-square analysis supports this perception with a test statistic of 14.09 and a p-value of 0.01, which is well below the 5% significance threshold. This confirms a statistically significant association between job board usage and the perceived effectiveness of recruitment outcomes. Therefore, the hypothesis H1 is accepted.

- **H2: Artificial Intelligence (AI)**

Artificial intelligence appears to be widely embraced, with over 80% of recruiters in the sample stating that they use AI tools such as automated screening systems, chatbots, resume parsers, or predictive algorithms. These tools are used across different stages of the recruitment funnel, particularly in CV analysis, candidate ranking, and initial engagement.

One of the first benefits noted by recruiters is AI's ability to automate the initial sorting of applications. These tools make pre-selection faster and less time-consuming, allowing HR teams to focus on the qualitative stages of the process.

A second advantage is the accuracy of matching profiles to job requirements. Algorithms are seen as capable of improving objectivity and limiting certain human errors, thereby enhancing the reliability of decisions made during pre-selection.

However, a minority of recruiters — around 5% of the sample — express reservations about algorithmic bias and lack of transparency. Although these concerns remain marginal, they highlight the need for human oversight to ensure the fairness of the process.

Table 6 – Perspectives on the Use of Artificial Intelligence in Recruitment

AI Usage	Beneficial – Faster and More Objective Preselection	Skeptical – Risk of Overlooking Skills	May Lead to Bias or Discrimination	Unfamiliar with AI Use	TOTAL
Yes	87	4	19	0	110
No	0	5	5	16	26
TOTAL	87	9	24	16	136

Source: Compiled by the authors based on the data collected in the present study

The dependency is highly significant. $\chi^2 = 27.49$, $df = 3$, $1-p > 0.01$

Despite these concerns, the chi-square test reveals a strong statistical dependency, with a test value of 27.49 and a p-value of 0.01. This indicates a highly significant correlation between the use of AI tools and improved recruitment practices, thereby validating hypothesis H2.

• **H3: Social Media**

Social media platforms—especially LinkedIn—are nearly universally used among the 136 recruiters surveyed. Only a single respondent reported not using social media as part of their recruitment activities.

The first advantage identified is easier access to a larger pool of candidates. Social networks make it possible to target not only active job seekers, but also so-called ‘passive’ profiles, who are not immediately looking for work but remain attentive to opportunities. This ability to reach a more diverse population is seen as a competitive advantage for companies.

A second benefit is the strengthening of the employer's image and organisational attractiveness. Several recruiters indicate that their company's active presence on LinkedIn or Facebook improves its reputation and helps to attract young graduates. In this sense, social networks are not only channels of communication, but also HR marketing tools.

Finally, some respondents mention the possibility of gathering additional information about candidates via their public profiles. Although this practice raises ethical debates, it is seen as a complementary way of assessing the cultural and behavioural compatibility of applicants with the organisation.

Table 7 – Use of Social Media and Its Perceived Impact on Visibility

Use of Social Media	Very Positively	Positively	Negatively	TOTAL
Yes	117	4	4	125
No	8	4	0	12
TOTAL	125	8	4	136

Source: Compiled by the authors based on the data collected in the present study

The dependency is statistically significant. $\chi^2 = 20.66$, $df = 1$, $1-p = 0.02$

Respondents appreciate the targeting power of professional networks, which allow filtering based on industry, location, experience, and skill sets. Moreover, social media platforms are seen as flexible and cost-effective, offering significant returns for a relatively low investment.

The chi-square test validates these findings, with a result of 20.66 and a p-value of 0.02. This confirms a statistically significant link between social media use and positive recruitment outcomes, supporting hypothesis H3.

- **H4: Coding Games (Gamified Assessments)**

Gamification tools—particularly coding games and simulation-based assessments—have seen increasing adoption, with approximately 97% of respondents using them in technical recruitment contexts.

Recruiters reported that these tools offer several strategic benefits, indeed, gamification is seen as a promising innovation by the majority of recruiters. It is considered useful for improving the candidate experience, reducing stress during assessments and presenting a modern and attractive image of the employer. Several respondents believe that it helps to strengthen applicant engagement and energise the process.

Gamified assessments also provide objective, data-rich feedback, enabling more nuanced hiring decisions. Nevertheless, a small portion of respondents (around 3%) remains skeptical, citing issues such as lack of alignment with job-specific requirements, absence of standardized scoring frameworks, and potential accessibility challenges for some candidates.

Table 7 – Perceived Relevance of Coding Games in Recruitment

Use of Coding Games	Very Relevant	Relevant	Less Relevant	TOTAL
Yes	76	46	0	122
No	0	0	14	14
TOTAL	76	46	14	136

Source: Compiled by the authors based on the data collected in the present study

The dependency is highly significant. $\chi^2 = 10.30$, $df = 1$, $1-p = 0.01$

The chi-square test confirms the statistical relevance of these perceptions, with a test value of 10.30 and a p-value of 0.01. This means the relationship between the use of gamified tools and recruitment effectiveness is significant, and hypothesis H4 is therefore accepted.

3.2.3 Summary of Chi-square Test Results:

Table 7 - Summary of Chi-square Test Results

Hypotheses	Chi-square Value	Significance	Result
H1	14.09	0.01	Accepted
H2	27.49	0.01	Accepted
H3	20.66	0.02	Accepted
H4	10.3	0.01	Accepted

Source: Compiled by the authors

The analysis confirms that all four digital tools show **statistically significant associations** with improved recruitment outcomes.

5. Discussion

The findings of this case study contribute to the broader academic discourse on the digital transformation of recruitment processes. They offer empirical support for a number of established theories and observations from the literature while also highlighting areas where further investigation is warranted.

First and foremost, our results reinforce the validity of previous research by Holm et al. (2014), who emphasized the efficiency of e-recruitment tools in streamlining talent acquisition processes. The data from our study clearly show that recruiters perceive digital platforms—such as job boards, AI-powered screening systems, and social media—as central components in their day-to-day recruitment strategies.

This observation aligns with the arguments of Brian Solis (2017), who stated that social media platforms have revolutionized interactions with stakeholders. In the context of recruitment, these platforms serve not only as sourcing tools but also as channels for employer branding, community engagement, and candidate relationship management. Our findings echo those of Boudi & Qachar (2017), who demonstrated that integrating social media into organizational strategy significantly enhances visibility and attractiveness to potential candidates.

When it comes to job boards, our research validates the earlier conclusions of Sheony, Bonet et al., and Parry & Wilson (2009), who described these job boards as accessible and integral resources for job seekers. Respondents from our sample also noted that recruiters used job boards because of their extensive coverage, affordability, and ease of use. However, our findings were in line with the noticing of Peltokorpi (2021). Who, for example, observed that in spite of their potential, job boards are underutilized by a number of organizations. This seems to indicate that while job boards are acknowledged, their purposeful application within organizational recruitment frameworks is possibly delayed in relation to their actual potential. About AI's role in recruitment, our study added evidence for the increasing involvement of AI, which Delaye (2019) pointed out when explaining the mounting focus of AI on human resources. Also, Hmoud & Laszl (2019) spoke about AI in recruitment saying that it has the ability to make the whole process more efficient by making candidate screening and selection faster and more accurate. Our results indicated that the majority of the recruiters in our study, in fact, use AI tools and consider them very effective.

However, our findings also echo concerns raised in the literature. Bendick and Nunes (2012) warned of the risk of unintentional discrimination arising from algorithmic biases embedded in AI systems. Some of the respondents in our sample expressed ethical concerns and reluctance to fully delegate candidate evaluation to automated tools. These insights underline the importance of adopting responsible AI practices, ensuring that digital solutions are transparent, fair, and inclusive.

With regard to gamified assessments: Nikolaou et al. (2024) show that gamified assessments are not limited to a simple novelty effect: they encourage positive reactions from candidates and strengthen their engagement. Schmidtner et al. (2025) go further by emphasizing that these tools can increase employer attractiveness, particularly in highly competitive environments, while reiterating the need to ensure their scientific validity.

The final theme explored in our study pertains to the candidate experience, a topic that has gained increasing attention in both academic and professional circles. Hervé Solus and Chantal Engel (2017) emphasized that candidate experience spans from the initial interaction to post-hiring integration, and is shaped by the fluidity and quality of communication throughout the recruitment journey. Our findings suggest that digital tools—particularly automated messaging and real-time updates—are key to enhancing candidate satisfaction by improving transparency, responsiveness, and accessibility.

Gazit et al. (2025) show that the quality of the candidate experience not only determines the immediate satisfaction of applicants, but also the reputation of the employer and the long-term retention of talent. These observations extend the findings of Solus and Engel (2017), while updating them to the era of interactive and automated digital tools.

In summary, the empirical evidence collected through this study aligns closely with existing research, reinforcing the idea that digital tools have a significant and multifaceted impact on recruitment practices. Whether by expanding reach, improving efficiency, or enhancing

candidate experience, these tools are shaping a more agile and strategic approach to talent acquisition.

6. Conclusion

Digital advancement in recruitment processes has changed the way organizations assess and engage with candidates at both strategic and operational levels. This study illustrates how job advertising, social media, AI-powered scanning, and gamified assessment tools improve efficiency, outreach, and overall experience. These results are supported by existing literature, such as “Digital Recruitment: An Analysis of Emerging Trends and Innovative Practices,” which validates the role of digital tools in improving recruitment processes within organizational strategy.

However, our results also highlight persistent tensions. While automation and interactivity improve procedural efficiency, concerns about algorithmic bias, depersonalized experiences, and unequal access to digital infrastructure remain critical. These challenges require organizations to not only invest in digital tools but also to adopt governance frameworks that ensure fairness, transparency, and inclusivity.

Also, this analysis reinforces that the efficacy of digital recruitment is not simply reliant on technology use; rather, it stems from the alignment of the tools with the overarching HR strategies and employer image-building activities. Companies that position digital recruitment as a strategic competency, as opposed to an operational enhancement, realize greater returns in candidate quality, candidate and organizational satisfaction, and overall fit to the organization. In light of these insights, future research could explore deeper qualitative dimensions of digital recruitment, particularly around candidate perceptions, ethical dilemmas, and the role of human judgment in hybrid recruitment models. Additionally, expanding the scope of investigation to include cross-cultural or industry-specific perspectives may help uncover new patterns and innovations.

Ultimately, digital recruitment should not be seen as an end in itself, but as an evolving ecosystem—one that blends technology with human insight to create a more agile, inclusive, and high-impact recruitment process.

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