The 4th Wave of the Digitization of the Recruitment Process: Advantages and Disadvantages

La quatrième vague de numérisation du processus de recrutement : avantages et inconvénients

BENHMAMA Asmaa
Doctorante en Science de Gestion
Faculté des Sciences Juridiques, Economiques et Sociales Ain CHOCK
Université HASSAN II-Casablanca
Laboratoire de Recherche en Economie de Développement et Gouvernance des Organisations
benhmamaasmaa@gmail.com

BENNIS BENNANI Yasmina
Professeur d'Enseignement Supérieur
Faculté des Sciences Juridiques, Economiques et Sociales Ain CHOCK
Université HASSAN II-Casablanca
Laboratoire de Recherche en Economie de Développement et Gouvernance des Organisations

Abstract

Our research focuses on analyzing the advantages and disadvantages of digitizing the hiring process in relation to the use of artificial intelligence and the addition of a gender viewpoint. The research emphasizes the advantages of incorporating technology 4.0 to streamline the hiring process, but it also draws attention to the potential for prejudice brought about by the misuse of AI. It was also emphasized how crucial it is to approach the hiring process with consideration for gender. The investigation's findings are displayed according to the respondents' unique attributes, such as their age, gender, occupation, years of experience, and the length of the interviews, stated in minutes. to gain a sense of how gender discrimination in the workplace is affected by digitizing recruitment.

Keywords: Recruitment; Artificial Intelligence; Discrimination; Gender approach; Human Resource Management.

Résumé :

Notre étude est consacrée à une analyse des implications, à la fois positives et négatives, de la digitalisation du processus de recrutement, en particulier en ce qui concerne l'incorporation de l'intelligence artificielle et l'adoption d'une perspective de genre. L'étude met en relief les avantages inhérents à l'intégration de la technologie 4.0 en vue de faciliter le processus de recrutement, tout en mettant en exergue les risques de discrimination qui peuvent découler de l'exploitation de l'IA. L'importance de l'instauration d'une approche genre dans le processus de recrutement est également soulignée. Les résultats de cette investigation sont exposés en se basant sur des caractéristiques spécifiques des individus interrogés, notamment leur sexe, leur âge, leur poste occupé, le nombre d'années d'expérience et la durée des entretiens, exprimée en minutes. Afin d'avoir une idée sur l'impact de la digitalisation du recrutement sur la discrimination de genre au travail.

Mots Clés : Recruitment ; Intelligence Artificielle ; Discrimination ; Approche genre ; Gestion des ressources humaines.

Introduction:

Human resource management holds a prominent position in the internal management procedures of businesses. Its mission is to manage the human capital and implement actions to enhance and strengthen skills. At this level, human resource managers rely on two main approaches to establish specific competence within their organizations. The first approach involves engaging in training programs and hiring experts whose mission is to enhance employee performance. This typically entails the external intervention of an expert who proposes specific programs aimed at improving the targeted competence. The second approach is to recruit individuals who already possess the required competence. It is worth noting that companies often lean toward the second approach to bolster their human capital.

Recruitment is a managerial activity aimed at establishing a process for the selection, screening, and integration of new candidates into a company. Recruitment is a procedure carried out by the organization to attract potential employees (Barber 1998). For (Benchemam et Galindo 2013), recruitment is a process that involves financial, human, and technological resources to onboard one or more individuals into an organization (Michelli, Furlong, et Quinn 2003). recruitment is considered a process based on the research and selection of new candidates to join an organization. For (Windolf 1986), recruitment is the activity of selecting the ideal candidate, that is, the most suitable candidate to carry out the work (Diard, Baudoin, et Berthet 2022). The following definition is proposed: "The recruitment process is the set of actions carried out to attract, select, and integrate potential collaborators that the company needs, while adhering to legal obligations and limiting costs." This definition outlines the general framework within which recruiters operate in their quest for new candidates. Recruiters are encouraged to adhere to a budget allocated for the recruitment process by the management, which can potentially limit the effectiveness and relevance of the process, all within a regulatory and ethical framework established by the organization. Today, in light of the intense competition among companies in the market, recruitment has become an invaluable tool for organizations to enhance their capabilities and attract top talents capable of innovating and adding value to the company's products and services (Michaels, Handfield-Jones, et Axelrod 2001). For this purpose, companies are constantly seeking to improve, perform, and optimize their recruitment processes and strategies. With technological advancements, the recruitment process has evolved in form and substance. Indeed, the fourth industrial revolution, often referred to as Industry 4.0, has enabled companies to introduce new tools that enhance their operations. Among these tools, artificial intelligence stands out as a recent technology that has disrupted

the functioning of certain services within companies. this is a scientific concept that involves creating robots capable of simulating human actions. The term "intelligence" indicates that the robot develops its own intelligence, which equips it with all the cognitive abilities necessary to mimic human behavior. The concept first appeared in the work of academics in the 1950s (Buchanan 2005; Foote 2010; Haenlein et Kaplan 2019). Today, artificial intelligence (AI) plays a crucial role in various aspects of human life. Our focus is specifically on the application of AI in the field of human resource management, particularly in the context of recruitment. In this article, we will explore the structural changes that have impacted the recruitment process within companies, particularly with the emergence of artificial intelligence. Our objective is also to identify *Who the economic foundations, financial and social underpinnings that have facilitated the emergence of electronic recruitment or E-Recruitment in Morocco?* For this purpose, our article is divided into four main sections: the first section introduces the concept of E-Recruitment and its evolution with technological development, the second section delves into the advantages of the 4th generation of E-Recruitreg, or algorithmic recruitment. Meanwhile, the third section explores its disadvantages, and finally, a concluding section sums up our findings.

1- Literature Review:

Recruitment is a vital activity for the organization to sustain its existence by continually acquiring new skills and enhancing its expertise to improve the company's productivity. Recruitment can be described as a procedure implemented by the organization to welcome new talents. The recruitment process consists of numerous steps, and there is no consensus among academics and practitioners on the recruitment approach. This lack of consensus can be attributed to the factors that directly influence the recruitment process, of which there are four key factors:

Figure 1: Factors Affecting the Recruitment Process
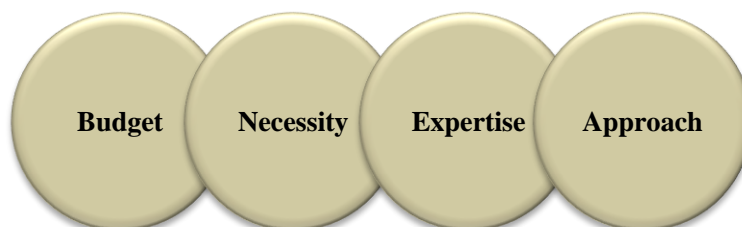
Source: The authors

Factor 1 - the budget allocated by the company for recruitment: This is an intrinsic factor related to the company's ability to finance a recruitment process. Indeed, large companies often allocate substantial budgets capable of conducting large-scale recruitment campaigns.

Factor 2 - the nature of the vacant position in the company: An intrinsic factor that influences the recruitment process, as certain positions, especially those related to leadership, require a significant sourcing effort to identify the right profile. This can lead to an extension of the recruitment process in terms of time and approach.

Factor 3 - The professional abilities of the recruiter: The expertise of a senior recruiter enables them to optimize their work and avoid errors, allowing the company to preserve its financial resources and prevent wastage of time and money.

Factor 4 - The recruitment approach: The full or partial use of new technology in the recruitment process plays an essential role in determining the quality of recruitment. Indeed, traditional recruitment methods are prone to yielding inaccurate and suboptimal results.

These factors represent the primary parameters that drive companies to establish a specific form of recruitment. Clearly, a single factor does not have an impact on the efficiency and effectiveness of recruitment but rather the combination of all factors that influence the performance of the recruitment process.

1.1 Recruitment Phases

Numerous scholarly endeavours have explored the multifaceted nature of the recruitment process, shedding light on various administrative approaches (Guerrero 2014). Posits that recruitment can be delineated into distinct phases: (1) Attracting candidates by leveraging the employer's image and the position's attributes, followed by the company collecting the receives application. (2) Selecting candidates through the utilization of assessment tools, including interviews and tests, and subsequently, the company puts in place the envisaged process to reach a final hiring decision.(3) The incorporation of newly hired personnel involves the adoption of socialization strategies, such as integration days or onboarding programs, along with a welcoming process (Diard et al. 2022), they suggest a recruitment procedure structured around five steps : (1) The delineation of recruitment needs to delineate the requisite course of action, (2) Sourcing encompasses the implementation of precise targeting and candidate search methodologies aligned with the company's requirements, (3) The selection phase involves the establishment of a mechanism for distinguishing candidates based on psychological criteria (e.g. Motivation) and / or operational (e.g. academic formation, experiences, etc), (4) The determination for confirming the selected candidates, (5) The assimilation of newly recruited

individuals within the organization. As per (Peretti 2015), recruitment hinges on a meticulous process subdivided into four pivotal stages:

Process	Stages
Defining the Need	• Recruitment request ; • Recruitment decision ; • Position definition ; • Profit definition ;
Candidates Search	• Internal prospecting ; • External candidate search ;
Candidate Selection	• Initial screening of applications ; • Questionnaire ; • Interviews ; • Tests ;
Finalization	• Decision ; • Negotiation of contract terms and signing; • Orientation and integration ;

Table 1: Recruitment process

Source : Peretti, (2015)

Moving forward, we will base our exploration of the procedural changes that have arisen from digitization and have impacted the recruitment process on the model put forth by Peretti (2015).

1.2. Evolution of Recruitment Processes

Recruitment is a vital undertaking for companies to safeguard their existence by consistently hiring top-calibre professionals capable of ensuring the seamless progression of their business operations. Hence, it is not surprising to witness a lack of unanimity in recruitment approaches, as each organization develops its unique approach, influenced by a multitude of factors. A recent game-changer in the recruitment landscape is the phenomenon of digitalization. This represents a technical transformation that has affected the tools and mechanisms employed in recruitment, all while upholding the core objectives. The evolution of the recruitment process can be delineated into four significant phases:

- **Recruitment 2.0: Human/Machine - Human Interaction:**

Recruitment 2.0, or the early phase of E-Recruitment, can be seen as the initial endeavour to digitize the recruitment process. This approach represents a semi-digitalized method that combines both human and machine interventions in at least one stage of recruitment. It emerged in the late 1990s alongside the advent of Web 1.0 (Ensher, Nielson, et Grant-Vallone 2002; Fondeur et Lhermite 2013). We will now examine the alterations introduced by Recruitment 2.0 in each phase.

The concept of "Recruitment 2.0" denotes the transition from conventional document and record management to a digital approach, as well as a preference for video conferencing over face-to-face meetings in the initial stages of the recruitment process. It embodies a more streamlined and efficient approach to recruitment in comparison to practices that prevailed before the digital era, such as paper-based applications, handwritten cover letters, multiple in-person interviews conducted across long distances before a final hiring decision, and so on.

✓ **Need Definition:**

E-Recruitment has facilitated the establishment of an internal Local Area Network (LAN) within the organization in the form of fundamental recruitment management software. Through this network, various departments continuously exchange management information, particularly in the domain of human resource management. The focus here is on the electronic method employed to pinpoint requirements for vacant positions. It represents not so much the digitalization of needs as it does the modernization of needs.

✓ **Candidates Search:**

In the context of Recruitment 2.0, we observed the initial utilization of the internet in the recruitment process, which manifested in two forms: (1) Internal prospecting: The HR department utilizes the network (e.g., professional email services, intranet platforms, etc.) to circulate job descriptions for vacant positions, encouraging internal personnel to apply online. (2) For external candidate sourcing, the HR department employs three approaches to receive external applications:

❖ Personal static website and email for online applications.

❖ Specialized static website for displaying job offers.

❖ Job search engines (e.g., Glassdoor, Indeed) and job meta-marketplaces (e.g., ZipRecruiter, Seek).

✓ **Candidate Selection:**

In the context of Recruitment 2.0, the involvement in this phase remains fairly restricted, as it still heavily depends on human intervention for candidate screening and evaluation. This involves the use of electronic tools that emerged with technological advancements and the rise of the internet. In this setup, recruiters manually conduct electronic resume screenings or email tests to candidates exclusively.

✓ **Finalization:**

Upon the final approval of the selected candidate, the finalization process takes place through two electronic channels. Firstly, the company may display the results on its website. Secondly,

it disseminates emails to notify candidates of the final decision. The Recruitment 2.0 process still plays a significant role in public sector employment when the government communicates its job openings through dedicated portals designed for this specific purpose.

- **Recruitment 3.0: Human/Machine- - Human Interaction**

Recruitment 3.0, or inbound recruiting, is a mature form of electronic recruitment that emerged with the development of Web 2.0. It is one of the functionalities that make the use of web tools more convenient and interactive. Recruitment 3.0 was born alongside the development of various digital innovations, such as blogs, social networks, and community sites. Likewise, this recruitment method has incorporated marketing techniques to optimize the recruitment process and enhance its effectiveness, including strategies like storytelling and creating candidate personas (Han 2014; Nichols et al. 2004). Certainly, the concept of Recruitment 3.0 represents an evolution of the Recruitment 2.0 concept, but on a broader scale. It is characterized by a holistic approach that integrates various tools used by recruitment professionals in a coherent manner. This approach emphasizes employer branding management, which is propagated through multiple channels, including social media, dedicated HR websites, and job platforms (Anand 2010; van Esch et Mente 2018). The transition to Recruitment 3.0 networks doesn't represent a drastic modification but rather an amalgamation of various sourcing and candidate management techniques into a cohesive process. "Sourcing" relies on keyword-based search methods and also involves the implementation of recruitment and referral campaigns disseminated through social media (Andrews 2012; Broughton et al. 2013; Gelinas et al. 2017). Moreover, this recruitment approach integrates novel forms of social interactions, including real-time interactions via mobile devices. Using text messages to reach out to potential candidates is one illustration of this (Chapman et Gödöllei 2017; Ross, Newman, et Chen 2015).

- ✓ **Need Definition:**

The advancement of digital tools has enhanced the recruiter's effectiveness and performance. Consequently, companies have adopted human resources management platforms, commonly referred to as Human Resources Information Systems (HRIS)(Baudoin et al. 2019; Sirh 2017). HRIS are digitized systems that connect the various departments of a department or company to a central network. Their mission primarily revolves around managing human capital, particularly in three key areas: compensation management, career management, and recruitment management (Gillet et Gillet 2010). Recruitment management involves automatically identifying vacant positions within the company, allowing the recruitment

department to initiate the recruitment process without the need for intervention from the department in need.

✓ **Candidate Search:**

In the case of internal candidates, the internal channel is used, with the HRIS automatically broadcasting information about vacant positions to all employees, encouraging them to apply directly through the system. External candidates are approached through three methods : (1) Social networks : (Davison et al. 2016; Dery, Tansley, et Hafermalz 2014; McCabe 2017; Quickfall 2022; Sameen et Cornelius 2015; Zide, Elman, et Shahani-Denning 2014), This is a technological innovation that emerged within the framework of Web 2.0 or the interactive web, on which companies broadcast their job postings with detailed descriptions. The advantage of this method is that candidates can interact directly with the job posting by asking questions about the announcement, making suggestions, or sharing it with other interested parties. The most widely used platform for this is LinkedIn, which had 930 million users as of September 2023 (LinkedIn 2023). (2) Automated Emailing: The automation of email involves utilizing a marketing automation platform to send automated messages, ensuring that the appropriate individuals receive the message at the right moment, all without requiring manual intervention (Babet 2020). (3) Advanced Marketing Strategies: Recruitment 3.0 extends beyond the mere utilization of social networks in the job search process. It integrates digital marketing strategies, also known as "Inbound Recruiting" (Hope 2015). In an academic context, another way to express the transformation in recruitment dynamics and practices brought about by recruitment marketing is to describe it as a paradigm shift in talent acquisition. This shift involves leveraging advanced digital tools and marketing techniques to create a more engaging and candidate-centric recruitment process. It results in a win-win situation for both candidates and organizations, with candidates having more authentic and informative interactions with employers, while organizations enhance their employer brand and attract better-suited talent. This paradigm shift emphasizes the importance of effective storytelling, branding, and candidate experience in modern recruitment (Viot et Benraïss-Noailles 2014).

✓ **Selection Candidates**

Automated pre-selection represents a critical aspect of Recruitment 3.0, facilitated through the extensive adoption of Applicant Tracking Systems (ATS). These systems enable the automated categorization of resumes based on pertinent keywords and predetermined criteria, thereby substantially alleviating the manual burden on recruiters (Klucin 2020). Moreover, social media analysis, particularly on platforms such as LinkedIn, is assuming an ever-more prominent role.

Recruiters scrutinize candidates' profiles to evaluate their professional experience, skills, and network. This approach offers a more comprehensive understanding of the candidate compared to the conventional resume alone (Hosain et Liu 2020). Virtual interviews, whether pre-recorded or conducted in real-time, have become increasingly prevalent. They offer a more flexible and efficient means of interaction between recruiters and candidates, allowing candidates to respond to pre-recorded questions or engage in live interviews through online platforms (Sellers 2014). Furthermore, online skills assessment is a crucial component of Recruitment 3.0. Some positions require specific evaluations, such as knowledge tests, practical exercises, or simulations, administered through dedicated online platforms (Lievens et M. Harris 2003; Snell et Morris 2019).

✓ **Finalization**

Following the candidate interviews, the dissemination of the results of the candidate selection process occurs through electronic means by leveraging advanced marketing techniques, such as personalized email communications. In this approach, each candidate receives a direct and personalized email to communicate their eligibility or rejection. Concerning the contract negotiation phase, which transpires between the employer and the selected candidate, two distinct channels are employed: an offline channel, reminiscent of the Recruitment 1.0 framework, which entails face-to-face negotiations, and an online channel that enables both parties to utilize video conferencing technology (e.g., Skype, Google Meet, Microsoft Teams, etc.) to reach a mutually agreeable arrangement (Baker et Demps II 2009). The employer delineates the responsibilities and expected tasks of the employee within the contract, while the candidate evaluates elements such as compensation, leave entitlement, and working hours, among others, etc.

- **Recruitment 4.0: Human-Machine Interaction**

Recruitment 4.0 represents a strategic orientation characterized by the incorporation of artificial intelligence (AI) technologies within the recruitment process. This paradigm seeks to enhance operational efficiency, elevate the relevance of candidate selections, and provide a more gratifying experience for applicants (Oswal, Khaleeli, et Alarmoti 2020). It entails an approach rooted in the interaction between a machine assuming the role of the recruiter and the human candidate, mediated through the utilization of algorithmic technologies. In essence, these technologies rely on algorithms for their functioning, including artificial intelligence (Al-Alawi et al. 2021; Oksanen 2018; Wilfred 2018), Big Data (Fernández 2022; Poch et al. 2014; Zang

et Ye 2015), Blockchain (Onik, Miraz, et Kim 2018; Rhemananda, Simbolon, et Fachrunnisa 2021), and Cloud storage (Manoj 2013).

✓ **Definition of Needs:**

Organizations are increasingly dependent on digitalized systems steered by artificial intelligence for the optimal management of their human resources. In the event of a workforce requirement, the system promptly identifies vacant positions.

✓ **Candidate Search:**

Utilization of databases and online recruitment platforms: In the context of Recruitment 4.0, recruiters gain access to extensive online CV databases, professional social networks, and recruitment platforms. They employ sophisticated search engines to sieve candidates based on pre-defined criteria.

✓ **Candidate Selection:**

According to (Lacroux et Martin-Lacroux 2022), multiple start-ups have been observed offering CV-less recruitment through diverse methodologies, encompassing database searches, utilization of LinkedIn, or exploration of internal organizational sources. Nevertheless, the identification of suitable profiles proves to be a challenging task, necessitating several hours of meticulous research. The utilization of a suite of artificial intelligence (AI) algorithms in the context of CV-less selection further enables the discovery of novel attributes pertinent to the job role. These AI algorithms comprehensively analyze all conceivable criteria and culminate in the ranking of candidate profiles, thereby aiding in the pinpointing of individuals with more refined skill sets. The integration of artificial intelligence (AI) also heralds an innovative dimension in the realm of candidate selection. It is employed for the scrutiny of candidates' responses, the prediction of their suitability for the position, and even the evaluation of their cultural alignment with the organization. This technological advancement facilitates a more equitable and precise assessment of candidates (Martins Oliveira 2020)

✓ **Finalization:**

Recruitment 4.0 is underpinned by advanced automation, an enhanced candidate experience, and a profound data analysis in comparison to Recruitment 3.0.

2. Methodology:

We will employ semi-directive interview guides as a method to evaluate the contribution of Industry 4.0 technology to the effectiveness of the recruitment process. Semi-directive interviews represent a qualitative technique extensively applied in sociological, psychological, and, more recently, economic studies. Data collection is based on semi-structured open-ended

questions centered around specific themes, where the interviewee is not constrained by a standardized approach but is encouraged to draw upon their expertise, skills, and personal style to articulate their insights and opinions on the posed questions (Pin 2023).

The method we have adopted for structuring the semi-directive interviews consists of three phases: First, the interviewee is asked to provide an introduction to their organization or client company. Second, they are invited to present their professional experience. Third, we proceed to pose our interview questions. We have targeted nine professionals within the field of human resource management in Morocco, all of whom integrate Industry 4.0 technology into their professional activities. These interviews were conducted between October 2022 and May 2023. The primary areas addressed during the interviews are organized around three key elements:

Axis 1: Adoption of Industry 4.0 Technology by Professional Enterprises

The primary aim of this axis is to assess the technological innovation landscape within Moroccan enterprises, particularly in the domain of human resource management and talent acquisition. It endeavours to investigate whether companies vigilantly embrace the transformative technological changes, such as artificial intelligence, that are reshaping the business landscape, or if they persist in adhering to antiquated methodologies.

Axis 2: Evaluating the Impact of Industry 4.0 Technology on the Recruitment Process

This axis is intricately intertwined with the first and is specifically tailored for companies that have integrated Industry 4.0 technology into their recruitment processes. The objective is to discern the influence of this technology on recruitment process efficacy, whether such influence is constructive or adverse.

Axis 3: The Paradigm of Recruitment 4.0 and Gender Discrimination

The final axis revolves around the societal implications of the novel Recruitment 4.0 paradigm, with a particular focus on gender-based discrimination throughout the recruitment procedure. Through the insights gleaned from professionals, we seek to ascertain whether the advent of Industry 4.0 technology has alleviated this pervasive issue or perpetuated it.

3. Results

In presenting the results, in our presentation of the results, we have adhered to the following format: firstly, we will provide an overview of specific attributes pertaining to our interviewees (e.g., gender, age, latest job position, years of experience, and interview duration in minutes). Subsequently, we will address the core axes of our study, fortifying our analysis with insights derived from these professionals' accounts.

3.1 Participant Profiles

In the following table, we outline the characteristics of the professionals who participated in interviews and provided responses to our inquiries.

Interviewer code	Gendre	Age	Occupied post	Year of experience	Meeting duration
I1	Man	53	CEO	25	30 minutes
I2	Man	46	Human Resources Director	20	25 minutes
I3	Woman	43	Human Resources Director	18	40 minutes
I4	Man	57	Human Resources Manager	25	20 minutes
I5	Woman	36	Recruitment Consultant	10	30 minutes
I6	Woman	37	Recruitment and Training Manager	13	45 minutes
I7	Man	33	Senior Recruiter	10	25 minutes
I8	Man	47	Human Resources Director	22	20 minutes
I9	Woman	34	Recruitment Consultant	6	30 minutes

The demographic breakdown is as follows: 55% male and 45% female. The average age of the professionals is 43 years, with an average of 17 years of professional experience. The cumulative interview duration across all participants amounted to 265 minutes, averaging 30 minutes per individual. Additionally, 77% of the participants hold positions of responsibility, categorized as 57% directors, 42% managers, and 23% human resource consultants. This contextual information offers insights into the interviewee demographics and sets the stage for our analysis.

3.2 Utilization of Industry 4.0 Technology by Professional Enterprises

As per the insights derived from the interviews, it becomes apparent that the majority of professionals exhibit a keen awareness of the opportunities presented by Industry 4.0 technology. This cognizance is manifested through two distinct procedural modalities. Firstly, a subset of the interviewees has attested to their companies' longstanding integration of Industry 4.0 technology into the recruitment process:

- Interviewee I1 asserts, « *We have implemented a platform based on AI and Big Data to efficiently sort and analyze candidate applications. This allows us to swiftly identify relevant profiles based on specific search criteria* »;

- Interviewee I5 emphasizes, « *As the HR manager of company X in Morocco, we indeed leverage Industry 4.0 technologies in our recruitment process. AI is at the core of our approach for streamlining candidate selection and evaluation. We have also integrated*

Big Data to analyze substantial volumes of data on candidate skills, career paths, and performance »;

- Interviewee I6: « *As the HR manager at company Y, we actively employ Industry 4.0 technologies in our recruitment process. AI is central to our approach, enhancing sourcing efficiency and relevance. We also use Big Data to analyze extensive data on candidate skills, completed projects, and career trajectories…*»;

- Interviewee I7: « *As the HR manager at company Y, we are committed to innovation and the adoption of cutting-edge technologies in our recruitment process. We combine AI, Big Data, and Cloud to enhance recruitment efficiency. AI aids in task automation, while Big Data enables valuable insights into candidates and the job market. Cloud provides a secure platform for managing candidate data* »;

- Interviewee I8: « *Yes, our company uses AI in the recruitment process. We employ AI algorithms to filter applications based on criteria such as keywords in CVs and past experiences. However, we have noticed that AI tends to favour candidates with similar backgrounds to current employees, potentially perpetuating a lack of diversity in our workforce* »;

- Interviewee I9: « *Indeed, our company utilizes the Cloud to facilitate storage and access to candidate CVs, enhancing our efficiency in the recruitment process. Nevertheless, we ensure that selection criteria are based on relevant skills and qualifications, minimizing the risk of discrimination*».

From the interview responses, it becomes apparent that while many professionals have successfully integrated Industry 4.0 technologies into their recruitment processes, there are also those in the midst of planning and transitioning to this innovative approach. The predominant technologies are artificial intelligence (AI) and Big Data, with a modest incorporation of cloud technology for secure data management.

- Interviewee I3 shares insights, « *Our organization is actively in the process of implementing an AI and Big Data-based approach within recruitment. We've initiated the use of CV analysis software to expedite initial candidate screening and identify key competencies more efficiently. The Cloud plays a role in secure candidate data storage, facilitating accessibility and information sharing within our HR team*»;

- Interviewee I4 provides an overview, « *Our company is presently undergoing a transitional phase, preparing to embrace selected Industry 4.0 technologies in our*

recruitment process. We are exploring the integration of AI to enhance the efficiency of initial application screening and are using Big Data to glean deeper insights into employment market trends. However, full integration is pending internal process adjustments and HR staff training »;

Furthermore, it is noteworthy that not all organizations have adopted Industry 4.0 technologies in their recruitment procedures, as expressed by Interviewee I2: "*Our company currently abstains from employing Industry 4.0 technologies in the recruitment process. The predominant reason for this is our medium-sized status, coupled with the high implementation and maintenance costs of such technologies. Hence, we favour a more conventional approach reliant on the expertise of recruiters and in-person interviews for candidate assessment*". This underscores the significant role played by cost considerations in the decision-making process. Smaller and medium-sized organizations often find the expenses associated with the installation and maintenance of these technologies to be a substantial barrier. In contrast, larger corporations with ample budgets are more inclined to digitize their recruitment processes. The most prominently harnessed technologies in recruitment encompass artificial intelligence, big data processing, and cloud technology. These technologies rely on the deployment of intricate algorithms designed to manage and process large volumes of data.

3.3. The Impact of Industry 4.0 Technology on the Recruitment Process

Furthermore, during the interviews, several advantages of Industry 4.0 technology in the recruitment process were highlighted:

- ✓ **Enhanced Efficiency**: Interviewer I1 mentioned "*Yes, the application of this technology has led to several positive changes in our recruitment procedure. We have seen a significant improvement in the efficiency and speed of the preselection process. Moreover, the results are more relevant and tailored to the specific needs of each position, reducing turnover and increasing the satisfaction of selected candidates*".

- ✓ **Improved Candidate Matching**: Interviewer I5 shared the benefits of digitalizing their recruitment processes, stating, "*The integration of these technologies has significantly improved our recruitment process. We have observed increased efficiency and speed in the initial screening of applications, allowing us to conduct more in-depth interviews with the best candidates. The results have also been more conclusive, with a better alignment between the required skills and the selected profiles*".

- ✓ **Significant Impact:** Interviewer I6 emphasized, "*The impact of using these technologies is significant. The recruitment process is now faster and more efficient,*

enabling us to identify potential talents more quickly. Furthermore, the results are more precise and tailored to the specific needs of each project, enhancing the quality of selected candidates".

- ✓ **Efficiency and Precision**: Interviewer I7 identified advantages, saying, "*The use of these technologies has substantially improved our recruitment procedure. We have gained efficiency through the automation of repetitive tasks. The results are also more accurate, as we can better target candidates who best fit our requirements. This has accelerated our recruitment process while maintaining a high level of quality*".

- ✓ **Bias Concerns**: Interviewer I8 noted, "*Since we implemented the use of AI to screen CVs, we have noticed a significant decrease in the number of candidates from some underrepresented groups. This raises concerns about the presence of bias in the AI algorithm used*".

- ✓ **Enhanced Objectivity**: Interviewer I9 highlighted, "*Since adopting prerecorded video interviews, we have seen an improvement in the efficiency of the recruitment process, and the results are more objective due to a uniform assessment of skills*".

Companies in the transitional phase, as they plan to implement Industry 4.0 technology, have expectations of various benefits:

- ✓ **Streamlined Preselection:** Interviewer 3 pointed out, "*We hope that this technology will significantly reduce the time spent on preselection, allowing us to concentrate more on interviews and the relational aspect with candidates*".

- ✓ **Faster Initial Screening**: Interviewer 4 commented, "*The future use of these technologies is likely to accelerate the search and initial screening of applications*".

We can observe that the use of Industry 4.0 technology in recruitment is aimed at streamlining tasks and equipping recruiters with efficient tools for candidate sorting and selection. This implies that Industry 4.0 technology is primarily implemented at the early stages of the recruitment process, with the primary goal of facilitating the work of human recruiters.

3.4. The New Recruitment 4.0 Paradigm and Gender Discrimination

One of the major issues hindering ethical recruitment is the presence of gender discrimination, whether intentional or unintentional, in the recruitment process. Gender discrimination in the job market simply refers to any action that distinguishes one gender from another in terms of financial, social, or professional advantages. The adoption of Recruitment 4.0 technology is aimed at decreasing or even eliminating gender discrimination in the recruitment process within

Moroccan companies. Most of our interviewees have noticed a significant relationship between the reduction of gender discrimination during the recruitment process:

- ✓ **Interviewee I1**: "*This technology can contribute to reducing gender discrimination in the recruitment process. By relying on objective criteria and quantitative data, AI can help minimize unconscious biases that may influence candidate selection. However, it is important to emphasize that these technologies must be continuously monitored to ensure they do not reproduce existing inequalities or gender stereotypes...*"

- ✓ **Interviewee I5:** "*The responsible use of this technology can help combat gender discrimination by evaluating candidates solely based on their skills and qualifications. By avoiding gender biases, AI and Big Data enable a more objective assessment of candidates and contribute to fairer selection...*"

- ✓ **Interviewee I6**: "*Yes, the responsible use of this technology can help combat gender discrimination. By relying on objective criteria and quantitative data, AI can contribute to minimizing gender biases in candidate selection. However, we must remain vigilant and continue to regularly review the results to ensure fairness and inclusion in our recruitment process...*"

- ✓ **Interviewee I7**: "*AI can help minimize unconscious biases during candidate preselection and provide a more equitable assessment based on skills and experience...*"

Moreover, some of the respondents affirmed that this technology fails to effectively address gender discrimination in the recruitment process, as pointed out by the following interviewees:

- • **Interviewer I8:** "*...With the ongoing advancement of this technology, we have observed financial benefits in terms of reducing recruitment timelines and lowering costs, as well as technical advantages in identifying top candidates. However, we have not witnessed social benefits, such as a reduction in gender-based discrimination...*"

- • **Interviewer I9**: "*...Regrettably, we did not observe any significant change in combating gender discrimination when we decided to implement this new technology*".

According to these statements, the social advantages offered by Technology 4.0 may not be universally applicable to all enterprises. This is because algorithmic technology, which forms the foundation of Technology 4.0, particularly artificial intelligence and big data processing, is susceptible to errors that can result in inaccurate analyses. This affects the presumed objectivity of algorithmic decision outcomes. To succinctly summarize these findings, we present the following framework to encapsulate the interview results:
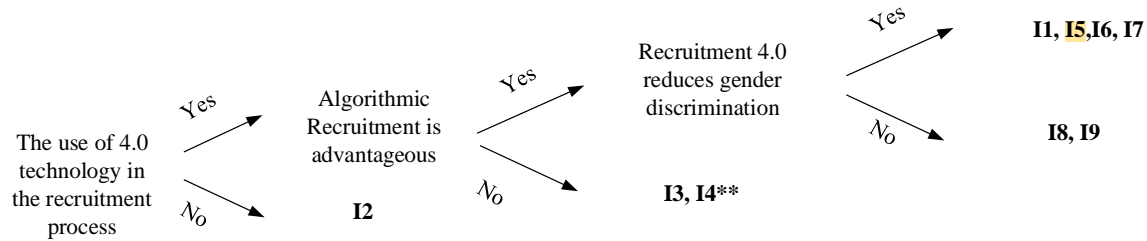
Figure 2: Tree Diagram of Decision Choices for Categorizing Interview Results

Source: Authors

Based on these interview sessions, it is evident that the use of Technology 4.0 provides financial and procedural benefits to companies. However, it may not necessarily yield social advantages. Likewise, the high costs associated with the implementation of Technology 4.0 influence companies' choices, leading to acceptance (i.e., I1, I5, I6, I7, I8, I9), rejection (i.e., I2), or planning (i.e., I3, I4).

4. Discussion

As observed earlier, traditional recruitment has long been rooted in a conventional approach that relies on human-to-human interaction. This method of recruitment offers a set of advantages and disadvantages. We enumerate several of its advantages: (1) **Immunity to Cyberattacks:** Candidate data remains safeguarded against cyberattacks since the processing of applications is performed manually, devoid of digital involvement. (2) **Enhanced Understanding of Candidates**, Particularly in Face-to-Face Interviews (Sears et al. 2013): Face-to-face interviews furnish recruiters with the opportunity to gain a more profound understanding of candidates and explore their behaviour through gestures and actions (including facial expressions and emotions), as opposed to relying on video conference interviews. On the flip side, traditional recruitment presents certain drawbacks: (1) **Protracted Recruitment Procedures** (Ensher et al. 2002): The classical recruitment process is time-consuming, given that each phase demands a significant amount of time for completion. Furthermore, the manual handling of tasks extends the duration of each step. (2) **Elevated Recruitment Costs** (Ensher et al. 2002): The classical recruitment process is costly to manage, as it necessitates manual execution of all tasks, leading to a substantial workforce requirement that impacts the recruitment budget. (3) **Pervasive Cognitive Biases**: In the realm of classical recruitment, cognitive biases, whether stemming from errors or subjectivity, often manifest as subjective judgments rooted in stereotypes and emotions. These biases can exert a detrimental influence on recruitment decisions by favoring some candidates while discriminating against

others. (Whysall 2018) underscores the recommendation for more structured and objective approaches to mitigate these drawbacks. The traditional recruitment process carries the risk of sidelining relevant profiles. Cognitive biases and subjective judgments can lead to inaccurate recruitment choices and, consequently, unjust elimination of qualified candidates. To mitigate errors and ensure a just evaluation of candidates, it is crucial to acknowledge these risks and institute recruitment practices that are both more objective and well-organized. In this context, the automation of the recruitment process has proven effective in overcoming some of these challenges.

4.1. Advantages of Digitizing the Recruitment Process

The integration of AI into the recruitment process has allowed HR professionals to make their recruitment procedures more efficient and automated, eliminating time-consuming tasks (Oswal et al. 2020). According to (Okolie et Irabor 2017), the digitization of the recruitment process brings various advantages, including the following: (1) **Expanded Reach:** Posting job openings on online platforms such as websites and social networks enables access to a broader audience of potential candidates. (2) **Expedited Process:** Allowing candidates to submit their applications online empowers recruiters to process them more quickly, reducing the overall duration of the recruitment process. (3) **Cost Savings:** The digitization of the recruitment process contributes to decreased costs related to advertising job vacancies, managing applications, and communicating with candidates. (4) **Enhanced Candidate Experience:** Providing candidates with the ability to apply online and track the progress of their applications creates a more positive overall experience during the recruitment process. (5) **Enhanced Recruitment Quality:** The incorporation of online screening tools enables recruiters to more effectively sift through applications, facilitating the identification of the most qualified candidates for available positions. (6) **Streamlined Data Management:** Candidate data can be stored and managed more efficiently through the use of online candidate management systems. In summary, the digitization of the recruitment process provides companies with the opportunity to more easily identify the most competent candidates, while simultaneously reducing costs, expediting operations, and enhancing the overall recruitment experience for candidates.

4.2.Disadvantages of Recruitment digitalization

The digitalization of the recruitment process brings forth a range of disadvantages that merit consideration. Firstly, from a procedural standpoint, AI-based recruitment algorithms can be susceptible to highlighting biases present in the training data, potentially resulting in

unintentional discriminatory outcomes. Multiple studies have provided empirical evidence of gender biases in recruitment procedures across various organizations and professions (Chen 2023; Drage et Mackereth 2022; Mujtaba et Mahapatra 2019; Ore et Sposato 2022). Research has shown that CVs with female names received lower ratings compared to identical CVs with male names, despite being identical (Hangartner, Kopp, et Siegenthaler 2021; Köchling et Wehner 2020). Furthermore, gender norms can unconsciously influence recruiter's perceptions of candidate's suitability for specific roles or leadership positions, leading to negative biases against female candidates even when they possess comparable qualifications to their male counterparts. While it is expected that AI could alleviate gender-based discrimination by providing an impartial assessment of candidates' qualifications without any subjective bias tied to gender identity, recent research has raised concerns about potential biases inherent in AI algorithms. These biases can stem from training data sets that encompass historical gender inequalities or reliance on biased information sources. Consequently, AI systems can inadvertently perpetuate discrimination instead of eliminating it (Njoto et al. 2022). (Hmoud et Laszlo 2019), emphasize that the automation of the recruitment process may lead to reduced personalized interaction between recruiters and candidates, resulting in diminished emotional connectivity and empathy, two essential components for assessing cultural fit. Candidates may perceive online recruitment processes as frustrating and impersonal, as they may feel that their applications are either overlooked or drowned in a sea of data. From a financial perspective, digital recruitment systems incur significant costs and require a complex setup, necessitating substantial investments in technology, staff training, and ongoing system management (Purvis 2016). Legally, the collection of personal data in the context of digital recruitment can raise privacy concerns and pose challenges regarding compliance with prevailing data protection legislation (Purvis 2016). It is imperative to implement measures to mitigate these disadvantages while ensuring that the use of technology in the recruitment process is conducted fairly and adheres to ethical principles.

Conclusion

In this article, we have delved into AI recruitment, which encompasses the use of artificial intelligence technologies for evaluating and selecting individuals for various career roles in Morocco. This process involves employing AI algorithms and machine learning methods to assess CVs, scrutinize candidate identification details, and predict job performance. AI recruitment offers numerous benefits, such as heightened efficiency and impartiality. However, it also triggers concerns related to gender-based discrimination. Gender-based discrimination

involves the unjust treatment or bias directed towards individuals based on their gender identity or expression. Nevertheless, there are drawbacks associated with relying solely on AI for recruitment purposes. The use of artificial intelligence in the recruitment process gives rise to substantial ethical concerns, particularly concerning principles of fairness and bias. Organizations must ensure transparency and accountability in the AI recruitment system's algorithms and models. The AI system should be capable of elucidating the decision-making process, thus ensuring transparency in the evaluation of candidates' qualifications and their subsequent selection for future stages of the hiring process. Furthermore, companies must take on the responsibility of monitoring and mitigating potential biases that may arise in their AI recruitment platforms. Conducting regular audits and assessments of these systems can help identify and rectify trends or partial outcomes. In summary, AI recruitment has the potential to yield benefits such as enhanced efficiency and impartiality. Nevertheless, if not executed with caution, it may perpetuate gender bias. Organizations employing AI technology in their recruitment processes must prioritize addressing ethical concerns linked to fairness and bias. Organizations can alleviate gender biases in AI recruitment systems by employing strategies like incorporating diverse training data sets, ensuring human oversight, maintaining continuous monitoring, and promoting collaboration with domain experts. Sustained research and evaluation are imperative to ensure the equitable and unbiased utilization of AI technology in human resource management procedures. By adopting this approach, we can actively contribute to the creation of a more inclusive and diverse workforce while mitigating gender-based discrimination. It is important to note that this study has certain limitations, such as the absence of specific constraints related to the use of video conferencing or other facets of the recruitment process, uncertainties regarding the representativeness of respondent characteristics, and the fact that this research relies on an analysis of existing literature and remains theoretical in nature

BIBLIOGRAPHY

1. Al-Alawi, Adel Ismail, Misbah Naureen, Ebtesam Ismaeel AlAlawi, et Ahmed Abdulla Naser Al-Hadad. 2021. « The Role of Artificial Intelligence in Recruitment Process Decision-Making ». P. 197-203 in. IEEE.

2. Anand, Raj. 2010. *Recruiting with social media: Social media's impact on recruitment and HR*. Pearson Education.

3. Andrews, Christine. 2012. « Social media recruitment ». *Applied Clinical Trials* 21(11).

4. Babet, Addou. 2020. « Utilization of personalization in marketing automation and email marketing ».

5. Baker, Erica, et Julius Demps II. 2009. « Videoconferencing as a tool for recruiting and interviewing ». *Journal of Business & Economics Research (JBER)* 7(10).

6. Barber, Alison E. 1998. *Recruiting employees: Individual and organizational perspectives*. Sage Publications.

7. Baudoin, Emmanuel, Caroline Diard, Myriam Benabid, et Karim Cherif. 2019. *Transformation digitale de la fonction RH*. Vol. 1. Dunod.

8. Benchemam, Faycel, et Géraldine Galindo. 2013. *Gestion des ressources humaines*. Gualino éditeur.

9. Broughton, Andrea, Beth Foley, Stefanie Ledermaier, et Annette Cox. 2013. « The use of social media in the recruitment process ». *Institute for Employment Studies* 3(13):1-42.

10. Buchanan, Bruce G. 2005. « A (very) brief history of artificial intelligence ». *Ai Magazine* 26(4):53-53.

11. Chapman, Derek S., et Anna F. Gödöllei. 2017. « E-Recruiting: Using technology to attract job applicants ». *The Wiley Blackwell handbook of the psychology of the Internet at work* 211-30.

12. Chen, Zhisheng. 2023. « Ethics and discrimination in artificial intelligence-enabled recruitment practices ». *Humanities and Social Sciences Communications* 10(1):1-12.

13. Davison, H. Kristl, Mark N. Bing, Donald H. Kluemper, et Philip L. Roth. 2016. « Social media as a personnel selection and hiring resource: Reservations and recommendations ». *Social media in employee selection and recruitment: Theory, practice, and current challenges* 15-42.

14. Dery, Kristine, Carole Tansley, et Ella Hafermalz. 2014. « Hiring in the age of social media: new rules, new game ». *University of Auckland Business Review* 17(1):44-51.

15. Diard, Caroline, Emmanuel Baudoin, et Sylvie Berthet. 2022. *Aide-mémoire-Ressources humaines-3e éd.* Dunod.

16. Drage, Eleanor, et Kerry Mackereth. 2022. « Does AI Debias Recruitment? Race, Gender, and AI's "Eradication of Difference" ». *Philosophy & technology* 35(4):89.

17. Ensher, Ellen A., Troy R. Nielson, et Elisa Grant-Vallone. 2002. « Tales from the hiring line: effects of the internet and technology on HR processes ». *Organizational dynamics* 31(3):224-44.

18. van Esch, Patrick, et Margaret Mente. 2018. « Marketing video-enabled social media as part of your e-recruitment strategy: Stop trying to be trendy ». *Journal of Retailing and Consumer Services* 44:266-73.

19. Fernández, Roberto Fernández. 2022. « Big Data as a Tool to Enhance Recruitment Processes ». *E-Journal of International and Comparative Labour Studies*.

20. Fondeur, Yannick, et France Lhermite. 2013. « Outils informatiques de gestion de recrutement et standardisation des façons de recruter ».

21. Foote, R. H. 2010. « The history of artificial insemination: Selected notes and notables ». *J. Anim. Sci* 80:1-10.

22. Gelinas, Luke, Robin Pierce, Sabune Winkler, I. Glenn Cohen, Holly Fernandez Lynch, et Barbara E. Bierer. 2017. « Using social media as a research recruitment tool: ethical issues and recommendations ». *The American Journal of Bioethics* 17(3):3-14.

23. Gillet, Michelle, et Patrick Gillet. 2010. *Système d'information des ressources humaines*. Hachette.

24. Guerrero, Sylvie. 2014. « Les outils des RH ». *Paris: 3e édition, édition Dunod*.

25. Haenlein, Michael, et Andreas Kaplan. 2019. « A brief history of artificial intelligence: On the past, present, and future of artificial intelligence ». *California management review* 61(4):5-14.

26. Han, Pingping. 2014. « A Literature Review on College Choice and Marketing Strategies for Recruitment ». *Family and Consumer Sciences Research Journal* 43(2):120-30. doi: 10.1111/fcsr.12091.

27. Hangartner, Dominik, Daniel Kopp, et Michael Siegenthaler. 2021. « Monitoring hiring discrimination through online recruitment platforms ». *Nature* 589(7843):572-76.

28. Hmoud, Bilal, et Varallyai Laszlo. 2019. « Will artificial intelligence take over human resources recruitment and selection ». *Network Intelligence Studies* 7(13):21-30.

29. Hope, Joan. 2015. « Incorporate inbound marketing into your recruitment strategy ». *Recruiting & Retaining Adult Learners* 17(8):1-7.

30. Hosain, Sajjad, et Ping Liu. 2020. « Recruitment through LinkedIn: Employers' perception regarding usability ». *Asian Journal of Management* 11(1).

31. Klucin, Fanny. 2020. « The use of artificial intelligence in the recruitment process ».

32. Köchling, Alina, et Marius Claus Wehner. 2020. « Discriminated by an algorithm: a systematic review of discrimination and fairness by algorithmic decision-making in the context of HR recruitment and HR development ». *Business Research* 13(3):795-848.

33. Lacroux, Alain, et Christelle Martin-Lacroux. 2022. « Should I trust the artificial intelligence to recruit? Recruiters' perceptions and behavior when faced with algorithm-based recommendation systems during resume screening ». *Frontiers in Psychology* 13:895997-895997.

34. Lievens, Filip, et Michael M. Harris. 2003. « Research on Internet recruiting and testing: Current status and future directions ». *International Review of Industrial and Organizational Psychology 2003* 18:131-65.

35. LinkedIn. 2023. « LinkedIn : About ».

36. Manoj, Gaddam Venkata. 2013. « E-Recruitment portal aided by cloud computing ». *International Journal of Innovative Research and Development (ISSN 2278–0211)* 2(5).

37. Martins Oliveira, Mariana. 2020. « ntelligence artificielle appliquée au processus de recrutement - Les perceptions des recruteurs ». Université de Liège, Liège.

38. McCabe, Mary Beth. 2017. « Social media marketing strategies for career advancement: An analysis of LinkedIn ». *Journal of Business and Behavioral Sciences* 29(1):85-85.

39. Michaels, Ed, Helen Handfield-Jones, et Beth Axelrod. 2001. *The war for talent*. Harvard Business Press.

40. Michelli, Dena, Michael Furlong, et Yvonne Quinn. 2003. « Dictionary of Human Resources and Personnel Management 3rd edition ».

41. Mujtaba, D. F., et N. R. Mahapatra. 2019. « Ethical Considerations in AI-Based Recruitment ». P. 1-7 in.

42. Nichols, Linda, Jennifer Martindale-Adams, Robert Burns, David Coon, Marcia Ory, Diane Mahoney, Barbara Tarlow, Louis Burgio, Dolores Gallagher-Thompson, Delois Guy, Trinidad Arguelles, et Laraine Winter. 2004. « Social Marketing as a Framework for Recruitment ». *Journal of Aging and Health* 16(5_suppl):157S-176S. doi: 10.1177/0898264304269727.

43. Njoto, Sheilla, Marc Cheong, Reeva Lederman, Aidan McLoughney, Leah Ruppanner, et Anthony Wirth. 2022. « Gender bias in AI recruitment systems: A sociological-and data science-based case study ». P. 1-7 in Vol. 1. IEEE.

44. Okolie, Ugo Chuks, et Ikechukwu Emmanuel Irabor. 2017. « E-recruitment: practices, opportunities and challenges ». *European Journal of Business and Management* 9(11):116-22.

45. Oksanen, Reija. 2018. « New technology-based recruitment methods ».

46. Onik, Md Mehedi Hassan, Mahdi H. Miraz, et Chul-Soo Kim. 2018. « A recruitment and human resource management technique using blockchain technology for industry 4.0 ». P. 1-6 in. IET.

47. Ore, Olajide, et Martin Sposato. 2022. « Opportunities and risks of artificial intelligence in recruitment and selection ». *International Journal of Organizational Analysis* 30(6):1771-82.

48. Oswal, Nidhi, Majdi Khaleeli, et Ayman Alarmoti. 2020. « Recruitment in the Era of Industry 4.0: use of Artificial Intelligence in Recruitment and its impact ». *PalArch's Journal of Archaeology of Egypt/Egyptology* 17(8):39-47.

49. Peretti. 2015. *Ressources humaines et gestion des personnes / Jean-Marie Peretti,...* 9e édition. Paris: Vuibert.

50. Pin, Clément. 2023. « L'entretien semi-directif ». *LIEPP Methods Brief/Fiches méthodologiques du LIEPP*.

51. Poch, Marc, Núria Bel Rafecas, Sergio Espeja, et Felipe Navío. 2014. « Ranking job offers for candidates: learning hidden knowledge from Big Data ».

52. Purvis, James. 2016. « Human resources marketing and recruiting: Essentials of digital recruiting ». *Handbook of Human Resources Management* 53-71.

53. Quickfall, Aimee. 2022. « Recruiting participants via social media: Like, share, block, report ». *SAGE Research Methods Cases*.

54. Rhemananda, Happy, Dima Roulina Simbolon, et Olivia Fachrunnisa. 2021. « Blockchain technology to support employee recruitment and selection in industrial revolution 4.0 ». P. 305-11 in. Springer.

55. Ross, William, Evan Newman, et Jeng-Chung V. Chen. 2015. « Human Resource Recruiting and Selection Using Cellphone Apps ». P. 184-203 in *Encyclopedia of Mobile Phone Behavior*. IGI Global.

56. Sameen, Sara, et Samia Cornelius. 2015. « Social networking sites and hiring: How social media profiles influence hiring decisions ». *Journal of Business Studies Quarterly* 7(1):27-27.

57. Sears, Greg, Haiyan Zhang, Willi Wiesner, Rick Hackett, et Yufei Yuan. 2013. « A comparative assessment of videoconference and face-to-face employment interviews ». *Management Decision* 51(8):1733-52.

58. Sellers, Rupert. 2014. « Video interviewing and its impact on recruitment ». *Strategic HR Review* 13(3).

59. Sirh, Cercle. 2017. *Le SIRH: Enjeux, bonnes pratiques et innovation*. Vuibert.

60. Snell, Scott, et Shad Morris. 2019. *Managing human resources*. Cengage Learning.

61. Viot, Catherine, et Laïla Benraïss-Noailles. 2014. « Employeurs démarquez-vous! La marque employeur, un gisement de valeur inexploité? » *Management international* 18(3):60-81.

62. Whysall, Zara. 2018. « Cognitive biases in recruitment, selection, and promotion: The risk of subconscious discrimination ». *Hidden inequalities in the workplace: A guide to the current challenges, issues and business solutions* 215-43.

63. Wilfred, Dennis. 2018. « AI in recruitment ». *NHRD Network Journal* 11(2):15-18.

64. Windolf, Paul. 1986. « Recruitment, selection, and internal labour markets in Britain and Germany ». *Organization Studies* 7(3):235-54.

65. Zang, Siyu, et Maolin Ye. 2015. « Human resource management in the era of big data ». *Journal of Human Resource and Sustainability Studies* 3(01):41-41.

66. Zide, Julie, Ben Elman, et Comila Shahani-Denning. 2014. « LinkedIn and recruitment: How profiles differ across occupations ». *Employee relations* 36(5):583-604.