THE USE OF ARTIFICIAL INTELLIGENCE IN RECRUITMENT AND SELECTION PROCESSES. EVIDENCE FROM CORPORATE RECRUITERS

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ABSTRACT

Globalization and the evolution of technology have put a lot of pressure on organizations to transform and update themselves, and there is an upward trend in organizations adapting to technology, especially the use of Artificial Intelligence (AI) in business. Currently, the hiring process is largely handled by recruiters who review resumes, online profiles, and other sources to find suitable candidates for open positions. As employees have limited skills, keeping up with all the necessary tasks is not an easy task and usually time-consuming for each recruiter. In Romania, AI represents an opportunity that will certainly help the country's economic development. Although Romania does not have an official plan to use this technology, its implementation in the public sector has been put on the agenda of a newly established institution: the Authority for the Digitization of Romania. This paper presents the relationship between AI and recruitment and selection processes. It also presents the view of recruiters from a multinational company in Romania, describing their different perspectives on AI adoption, future and risks associated with AI in recruitment. This paper aims to investigate how AI is implemented in the traditional recruitment process and what would be the implications of having AI in the recruitment of many candidates.

Keywords: recruitment, human resources, digitization, artificial intelligence, technology

INTRODUCTION

Artificial intelligence (AI) is a complex subject that can be applied in various fields of activity. Before we start examining the impact of AI on the organization and its employees, we need to define the concept of AI and what its role is. Nowadays, humans are trying to speed up every process, so any human activity that can be replaced by an algorithm may disappear sooner or later. American scientist John McCarthy, also known as the father of AI, offers a definition for this concept: "the ability of machines or computers to perform tasks and duties normally associated with human intelligence" [1]. AI generally refers to a wide range of technologies that can perform tasks, including decision-making, that often require human cognition [2].

For the first time in human history, we can say that we have a powerful tool that can find solutions to complex problems that no one or no group of human beings could have imagined

or thought of. Basically, given a complex number of problem parameters, AI can outperform human solutions in many areas. However, we use AI only in a limited way [3].

USE OF ARTIFICIAL INTELLIGENCE

Technology is now being deployed in many areas such as transport, manufacturing, finance, healthcare and education. AI software focuses on programs that use various mechanisms and tools to simulate human behaviour [4]. Instead of organizing data to run through predefined equations, deep learning establishes basic parameters about the data and trains the computer to learn itself through pattern recognition, using multiple neural network layers for processing, such as neurons in the brain [5].

While AI, machine learning and deep learning are trending technological terms we hear everywhere these days, there are misconceptions about what these words mean. To understand AI from a scientific point of view, we should look at the basics that make it up. According to one source [6], there are three main types of software that use AI: (1). AI platforms: provide tools and environments for AI software development, such as embedded algorithms, templates and drag-and-drop usage. These include social networks such as Facebook, Instagram and LinkedIn that use this software to improve user experience, other applications such as maps, recommendation engines (Spotify, Netflix, Amazon), robotics (drones, Sophia robot), healthcare (medical diagnostics, precision surgery), autonomous systems (autopilot systems, self-driving cars); (2). Machine learning software: programs that can learn from data and previous interactions with software. An example of this could be product recommendations that appear when we browse the internet. Matyunina [7] provides an example of how recruiters use machine learning, specifically to proactively find the right people for the job using software. It searches the internet for potential candidates. (3). Deep learning software: Deep learning is a branch of machine learning that trains a computer to learn from large amounts of data. Applications that can detect objects, edit photos or music are based on deep learning software; translation systems (Google Translate), virtual reality, healthcare (disease prediction). In recruitment, machine learning can be used to analyse social media profiles and identify candidate skills that might not appear on a CV.

To illustrate the relationship between these terms we can use the Figure 1 below:
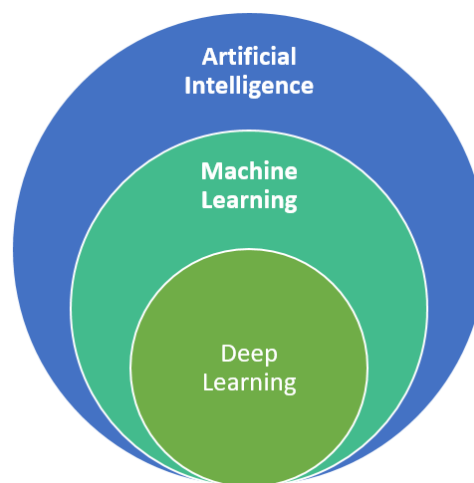

Figure 1: AI, Machine Learning & Deep Learning [18]

In this figure, AI, represented in the bigger circle, represents the idea that first emerged in the field. It has the ability to mimic human behaviour. Machine learning is situated in the middle after AI. This software deals with algorithms that improve over time. Deep learning is the smallest circle, represented as an extension of AI today. It uses complex algorithms and deep neural networks to train a model.

Biswas [5] argues that such learning software can be used in different forms: (1). Chatbots: are AI-based programs with conversational functions. They work on the principle of a dialogue between bots and users, which can also be conducted in real time. They are also known as digital assistants, precisely because they can mimic human functions; (2). Image and video recognition: deep learning algorithms go beyond human ability to make decisions based on criteria. Deep learning systems can identify, and rank candidates based on objective data, without discriminating on the basis of gender, race or age; (3) Speech recognition: although understanding the human voice and its myriad accents is difficult for most machines, deep learning algorithms can recognize and respond to the human voice. Virtual assistants use speech recognition algorithms to process the human voice and respond accordingly [8]; (4). Recommendation engines: digital learning experiences often involve personalized learning recommendations related to skill levels and professional interests.

ARTIFICIAL INTELLIGENCE IN RECRUITMENT AND SELECTION PROCESSES

AI is a new concept introduced in the field of human resources. However, it can have a significant impact on people management, especially in recruiting, training, growing and retaining employees in the workplace.

Figure 2: Impact of technology on the recruitment and selection process, figure generated with https://www.123rf.com

In Figure 2, you can see how technology can be beneficial in recruitment and selection processes. AI can help us to: generate automated CV screening, search for suitable job candidates, perform background checks with previous background and employment history, employ language or technical skills assessments, generate digital interviews.

Sharma and Malik [14] present the impact of AI in recruitment over several dimensions taken into account.

Pre-selection of candidates - AI screening is essential in the hiring process as it can save time, filter out suitable candidates and ensure quality hires. All this can be done in seconds. This means less time is invested in reviewing applications, leaving recruiters with extra time for building candidate relationships, culture development and other value-added HR activities. AI can be used to check the internet for people who might be suitable for the job opening. In the most extreme case, the candidate doesn't even have to create an application or CV, as AI can retrieve all the information from social media and other internet sources [19].

Chatbot in communicating with candidates - this is a conversational AI tool used in HR departments to screen candidates. It helps to send personalized information and messages, provides feedback and is always available to answer questions, providing real-time responses at any time of the day or night [14, p. 31]. Chatbots can also increase the number of applications suitable for the job, saving money and time. They are also known as digital assistants, precisely because they can mimic human functions. According to one source [20] the use of these robots has increased more and more, especially during the Covid-19 pandemic, and it is expected that this type of software will be increasingly used.

Emotion analysis - AI can analyse a candidate's feelings better than a human, as there will be no conflicting emotions during an interview. AI can recognise, extract and study candidate's moods using natural language processing, computational linguistics, facial recognition and biometrics.

Identification of passive candidates - passive candidates [21, p. 40] are those candidates who are not actively looking for a new job. They may be the best type of candidate. AI can simplify this, too. Instead of just focusing on a candidate's resume, AI can get more information from their public profiles, saving time. Furthermore, it can also help rediscover "hidden talent" among current employees, reducing the cost of acquiring new employees.

Eliminating favouritism-based hiring - Yawalkar [22] points out that nowadays, AI is being used to reduce favouritism and help increase transparency in the workplace. Stereotypes and personal biases are a trap that even the best recruiters can fall into. AI can help reduce unconscious bias during recruitment because it is programmable. In this way potential biases based on gender, ethnicity or even geographical location can be avoided [14, p. 31].

According to one source, recruitment is the process of finding candidates, which can be considered the backbone for any organization. We could define recruitment as 'the right people in the right job' [9]. This matching can ensure success within the organization. Thus, the management is able to achieve its goals. The phenomenon of AI has been widely studied in several fields. Regarding AI in human resource management, the literature shows limited research on the adoption of AI in this field [10].

In the ongoing battle for well-trained employees, technology plays an increasingly important role [11]. Changes in the labour market and the workplace are rewriting the rules of recruitment and selection. AI helps to automate the process by using techniques to extract relevant information about employees [12, p. 4]. Information extraction refers to the process by which information is obtained by reviewing a text information [13, p. 873]. Moreover, AI can recognize personality by analysing text in resumes, cover letters and even speech in an interview.

Communication in recruitment is one of the key activities, so it is very important to understand how communication contributes to recruitment success. Since humans are the most communicative species, AI needs to learn how to talk and how to answer questions [13, p. 888]. In addition to communication, it is also important to choose the right candidate for the vacancy.

During face-to-face interviews and assessments, interviewers tend to make less objective or rational decisions. Thus, an organisation may miss the opportunity to hire the best people. Hiring the right candidate for the job is critical when it comes to an organization's success. That's why all companies strive to identify and hire people with potential.

BENEFITS OF AI IN RECRUITMENT AND SELECTION PROCESSES

Karaboga and Vardarlier [23] present the benefits that AI can guarantee in the recruitment process:

- Saving time - time is saved by using AI tools, especially in repetitive tasks. Employers should allow enough time to scan each CV individually. Sharma and Malik [14, p. 32] provide an example of this: AI tools can analyse databases with many candidates in a minute and generate a list of suitable candidates.

- Intelligent recruitment automation - this can simplify the recruitment process. AI also plays a significant role in interview scheduling. A recruiter can thus constantly discover a candidate's time and availability as well as that of an interviewer [14, p. 32].

- Better experiences for candidates - by creating effective recruitment processes, recruiters can develop close relationships with candidates and provide them with a better experience. One study found that when conversational AI was part of the recruiting process, candidates felt a strong connection with the organization because AI can interpret interview conversations. Thus, recruiters and hiring managers were able to get more information about each candidate [24]. This leads to meaningful conversations and real connections.

- Selection of suitable candidates - Sharma and Malik [14] mention that adding AI to the recruitment process can make the match between candidate and job better. In the first stage of the process, AI can help formulate clear job descriptions. Secondly, AI can be used to find suitable candidates online, through targeted advertising based on demographic and behavioural variables. From another point of view [15], the author states that every HR manager puts emphasis on the quality of hiring as it is one of the most essential KPIs. Thus, quantify the effectiveness of the recruitment process to hire productive candidates. In other words, AI can analyse a candidate's knowledge, skills and experience and compare them with the job requirements to define how suitable the candidate is.

METHODOLOGY

Focusing on the details of this research, the main objective was to investigate how AI-based technologies are used during recruitment and selection processes and whether they help recruit the best talent(s) in the industry. The corpus of analysis for this research consists of the team of recruiters of one multinational company located in Romania, more precisely a team of six people.

The following objectives have been formulated according to the existing literature and will be tested through the two research methods used (observation and interview): (i). Observation of how AI is currently used in recruitment and selection processes within the company; (ii). Discovering the opinions of recruiters in the company about AI in recruitment and selection processes; (iii). Uncovering participants' unique experiences and perspectives on technological advances. The data that will result from these objectives will be qualitative, so we will be able to better understand, from an exploratory point of view, how AI is present in the company under

study. The formulated research questions are: (i). How is AI used in the HR department of the company? (ii). What is the perception of recruiters on the use of AI technology in recruitment and selection processes?

In accordance with the aim, questions and objectives formulated for the present study, the semi-structured interview and observation were established as research tools. The main argument supporting their choice as research tools is the high flexibility in discovering the opinions of people working in the researched field, namely the field of human resources. This qualitative study was conducted with the aim of exploring the status of AI in human resource management in a multinational company from Romania.

RESULTS AND DISCUSSIONS

The AI-driven apps that are being used the most in the HR department are *Success Factors* and *LinkedIn* platform, which are connected. LinkedIn uses data analytics and AI to improve the experiences of its users and of its customers. LinkedIn members can see this daily, from getting job recommendations, suggestions to connect with people to reading useful content in their feed [16].

Once candidates apply on LinkedIn, their CVs go into the Success Factors software in the section called "New". It allows the recruiter to take control of all HR processes: recruitment and selection. Using the analytics tools, HR managers can optimize the company's long-term recruitment strategy and update the ideal candidate profile. As soon as the candidate's profile is moved by the recruiter to the "Rejected" section, they will receive an email with feedback. If it is moved to the "Interview" section, the candidate's supervisor will know that the recruiter has scheduled an interview with the candidate. After the interview, he/she can be moved to the "Offer" and then "Hired candidate" sections.

As far as the interviewees' experience in the HR department is concerned, we can say that it ranges from beginner level, about one year in the company, to advanced or senior level, with more than eight years of experience. The age of the respondents ranges from 24 to 32 and their answers about AI are relatively similar.

When asked "What would you improve in the recruitment process at the moment?", they felt that digitization of certain steps in the process would be useful, but also that they would like to move away from paper documents. One interviewee felt that AI would even help candidates by allowing them to attend a single interview for a job that may be located in several departments, without having to be interviewed several times.

In terms of respondents' confidence in technology for carrying out recruitment and selection tasks, five out of six respondents have confidence in it, stating that: "it could simplify the recruiter's work", another argument being "shortening recruitment and selection time". When asked about the role of AI in recruitment and selection processes, all saw the technology as useful, but would not trust it to carry out the entire hiring process.

When asked to give examples of AI-based software in the HR field, respondents mentioned only those they use at work, with one respondent claiming: "SAP SuccessFactors and LinkedIn, because I work with them. Otherwise, I don't think that in our country technology has advanced so much in HR".

When asked "Do you use modern technologies in the hiring process in your department (e.g., AI-based application analytics, database management software, etc. in the hiring process)?", all respondents mentioned that they use SAP SuccessFactors and the social network LinkedIn, the

latter being closely related to the former. HR professionals were also asked about the influence of AI on the number of employees in the company. They all felt that the number of employees would be reduced. In addition, one respondent added that "repetitive jobs will be eliminated".

When asked about the challenges AI brings to recruitment, respondents highlighted factors such as lack of empathy and understanding. One respondent mentioned the errors of the system, arguing that "these apps are also invented by humans".

To the question "How do you feel about the idea that AI could identify suitable candidates? Please substantiate your answer", recruiters had little doubt about the performance of AI today. They see it as more of the future, stating: "Definitely in the future such technologies will be used. I think it could help the recruiter in identifying candidates, but the human factor has to be involved, as it is also the human factor that, in my view, has to make the decision on candidate selection."

When asked about the use of AI in the future, all recruiters replied that they would like to have complex software that could simplify their work, but not replace it entirely. All six recruiters agreed on a few things that traditional recruitment has to offer in terms of benefits. They all believe that traditional recruitment has the value of human touch. This means that there is always someone who can interact with candidates and have a special connection with them. Some interviewees argued that having human-to-human interactions, as in recruitment today, makes it easier to communicate without misunderstandings. It also makes it possible to discuss ideas, both between recruiters and between recruiter and candidate.

Table 1 below provides an overview of how the themes were identified and their significance in relation to the data that was collected. It includes the main themes of the research and the information gathered from literature, interviews and observation.

Table 1: Summary of identified themes and their indicators

Themes	Characteristics of indicators
AI efficiency in recruitment and selection	• Communicating with candidates; • Speeding up the recruitment process, automating the process; • Administrative and routine tasks.
Application of AI in recruitment	• Automation - automated responses, CV analysis and selection.
Human error and subjectivity	• Prejudices, personal opinions; • Favouritism in personal relationships and stereotypes.
Benefits and challenges of using AI	• Reducing routine and administrative tasks, speeding up the recruitment process, training machines and people.

CONCLUSION

21st century digital technology affects almost every aspect of economic life in modern society. As in other areas, the human resources sector is growing as a result of digitisation and technological development. The use of smart technologies, AI and opportunities and benefits leads to increased productivity and safer and better working conditions. Employee productivity is enhanced by AI-powered HR solutions. Technology can analyse, anticipate, diagnose, and

become a capable resource while focusing on employee requirements and outcomes. Organizations should adopt AI-driven solutions that meet the needs of their business and are compatible with their company culture. Digitalization will not only change the types of jobs available, but also the number and value of jobs. By replacing employees who perform routine and low-difficulty tasks, robots will amplify the potential of employees with problem-solving, leadership, empathy and even creative skills.

Recruitment includes a lot of routine operations that can be done much faster by machines or robots [17]. Recruiters should not lose their jobs, but they will certainly have more time to perform more complex tasks instead of routine activities. The success of any organization depends on how effectively it combines people, processes and technology and delivers value at optimal cost. AI helps automate back office transactional activity, enabling rapid service delivery.

There are several limitations of the study that need to be considered. First, this research involves only six participants, as this is the number of multinational company recruiters analyzed. Having the HR department as a benchmark, the researchers were able to compare the information provided by the respondents with data from the literature and their own experience, and from this it can be concluded that the data is in line with reality. Secondly, the use of AI in recruitment is relatively new and scarce, especially in Romania, where there is a limited availability of companies implementing AI in their recruitment process or developing AI recruitment software. This makes it difficult to conduct more extensive research, as most large companies use AI only to some extent in their recruitment process.

Future research may include both quantitative and qualitative aspects of the research. For example, the application of questionnaires on participants' attitudes towards AI-based technology as well as current HR-oriented practices in several companies. As more and more companies start to implement AI in their systems, there would be a need for proper training on this topic, both for those who want to use AI in recruitment and selection, and for all those who encounter AI in their job search.

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