STANOVNIŠTVO, 2023, 61(2), 167–181
Original scientific paper

Submitted: 11 Oct 2023 | Revised: 10 Nov 2023 | Accepted: 11 Nov 2023
https://doi.org/10.59954/stnv.546
UDC[004.8::349.2]:[331.108.34:331.53]
First Online: 15 Dec 2023

Legal aspects of artificial intelligence in the employment process

Helga Špadina [1]

ABSTRACT

The introduction of artificial intelligence in all domains of life is the most transformative process in recent history. It is also a highly dynamic process, and due to the pace of technological development, a very limited legal framework is available to address issues of human rights, ethics, transparency, privacy, safety and accountability.

During the last few years, artificial intelligence started to reshape employment processes. Positive aspects of the introduction of AI in the employment process are efficiency and quality in job matching, digitalisation and acceleration of the process, ability to process large data and match job seekers to available vacancy announcements, the alleviation of administrative burdens of employees of employment agencies and giving them strategic and innovative roles. All these are indispensable in present times when demographic challenges in European countries are leading to increased labour migrations and require changes in the recruitment process.

The paper explores the current challenges of AI, i.e. how to achieve human-centred values and fairness of AI use during the employment process, preventing algorithmic bias and discriminatory application of AI tools. In order to harness the maximum benefits of AI, we need to develop a regulatory framework that would be enforceable, inclusive and adaptive (OECD), particularly knowing that most AI solutions are privately owned and developed for commercial purposes.

KEYWORDS

artificial intelligence, employment, digitalisation, non-discrimination

[1] *Faculty of Law University J. J. Strossmayer Osijek, Croatia*

Correspondence:
Helga Špadina,
Faculty of Law University J. J. Strossmayer Osijek, Croatia

Email:
hspadina@pravos.hr

© The Authors. Published by the Institute of Social Sciences – Center for Demographic Research under a Creative Commons Attribution-NonCommercial 4.0 | http://idn.org.rs/ojs3/stanovnistvo/index.php/STNV

1 INTRODUCTION

Employment and work have been rapidly changing in the last several decades. The ILO outlined four major forces for change in the workplace: demographic change, technological change, globalization and climate change (International Labour Office 2017). Of those four changes, technological innovations and digitalisation of the recruitment process are probably the quickest. We witness progress in that area on a daily basis, and it is sometimes quite difficult to catch up with the pace of technological advancement, particularly in the area of artificial intelligence. This creates issues with the regulatory framework, which is of a more responsive nature or aimed at creating an enabling environment rather than *ex ante* regulation of AI.

In this paper, the OECD's definition of artificial intelligence is used. According to the OECD, an AI system is a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments. It uses machine and/or human-based inputs to perceive real and/or virtual environments; abstract such perceptions into models (in an automated manner, e.g. with machine learning or manually); and use model inference to formulate options for information or action. AI systems are designed to operate with varying levels of autonomy (OECD 2022). Artificial intelligence is the ability of machines or software or evolutionary machine learning algorithms to perform tasks that normally require human intelligence, such as reasoning, learning, decision-making, and communication.

The ILO has identified six 'disruptive' technologies, where 'disruptive' denotes the disruption of existing labour relations and the creation of new processes. These include the 'Internet of Things' — a network of physical objects that have an IP address and internet connectivity and communication; 'big data' — a massive volume of structured or unstructured data, sometimes derived from commercial or personal transactions to predict behaviour or drive complex algorithms for such functions as language translation; 'cloud computing' — a network of remote servers to store, manage and process data, used instead of local computers; robotics — goods- or service-producing computers that, mechanically, behave in some way like humans would, 3D printers — creating three-dimensional objects based on computer programs; machine learning — giving computers the ability to learn autonomously, without being explicitly programmed (creating what is known as artificial intelligence) (International Labour Office 2017).

The introduction of artificial intelligence into the recruitment procedures resulted in the reshaping of the recruitment landscape. Now, for the very first time, big data, algorithms and outcome predictions of any process — in this case the recruitment process — have become active, intelligent participants in shaping the human-technology-world relationship (Hershock 2020). The OECD emphasised that the impact of AI on the workplace will depend on the type of AI, how it is deployed, and contextual factors, including policies and institutions (Lane and Williams 2023).

The paper explores the most recent literature and policy documents on the use of artificial intelligence in recruitment procedures. It also examines the EU's General Data Protection

https://doi.org/10.59954/stnv.546

Regulation in all aspects relevant to the topic, including the right not to be subject to decisions based solely on automated processing, consent, transparency and privacy.

2 METHOD

The main research question of this paper analyses how AI can be used in the employment process for the mutual benefit of job seekers and employers. The first sub-question examines how to harness the maximum benefits from the introduction of AI in the employment process. The second sub-question addresses how to minimise the negative aspects of the employment process digitalisation, ensure the non-discriminatory application of AI in the employment process, and prevent algorithmic bias. The third sub-question investigates the advantages of introducing a regulatory framework to the already fully functional and privately developed digital tools to facilitate employment.

The main method employed in this paper is qualitative research. The paper aims to delve into the complex set of factors surrounding the central phenomenon of AI and discover the varied perspectives of its use in employment. It involves research of general theoretical questions about the application of AI and the employment process and issues related to the application of legal principles surrounding the use of AI in employment. This method was selected because it allows a comprehensive interpretation of various aspects of using AI in recruitment. The main research question and sub-questions are tested against several different criteria in order to explore if the application of AI in recruitment procedures could bring about negative results.

3 HARNESSING THE BENEFITS OF INTRODUCING ARTIFICIAL INTELLIGENCE IN THE EMPLOYMENT PROCESS

Job matching is a complex process involving numerous steps (job applications, screening, interviews, verification of education credentials, background reference checks, and many more) as well as a number of actors. Matching covers private recruitment by firms, but it can also refer to the activities of public and private employment services and those of job boards and platforms. In addition, matching can occur within and between organisations, and it could even involve acquiring certain skills to meet the requirements of a specific vacancy (Broecke 2023).

There are many relevant benefits of introducing AI in the recruitment process, so much so that it would be difficult to list them all. However, five benefits concerning machine learning and big data application are crucial for the employment process: recruitment process optimisation, the ability to process large amounts of data and efficiently match job seekers to available vacancy announcements, quality in job matching, digitalisation and acceleration of the process, and alleviating the administrative burden of employees of employment agencies.

3.1 OPTIMISATION OF THE RECRUITMENT PROCESS

AI (machine learning and software) can be used to optimise several key aspects of every recruitment procedure — job descriptions; search engines for online recruitment; identification of applicants' skills, qualifications and responsibilities typically associated with a certain job

title; the readability of individual job advertisements, as well as the uniformity of language and branding used across multiple job advertisements (Broecke 2023). Software solutions can further facilitate the recruitment process by selecting suitable applicants based on job and organisational requirements (selection), identifying suitable jobs for applicants and correct job rotation with respect to organisational requirements and job classification, and determining the salary and benefits for the applicants based on their qualifications (Saidi Mehrabad and Fathian Brojeny 2007). Examples of such programs include PeopleRecruit, PeopleForce, Work.ua, Robota.ua and HeadHunter, all allowing employers to post vacancies, add candidates to the directory, involve other human resource managers and specialists in the assessment of potential employees, screen applications and schedule interviews.

3.2 ABILITY TO PROCESS LARGE DATA AND EFFICIENTLY MATCH JOB SEEKERS TO AVAILABLE VACANCY ANNOUNCEMENTS

Human resources represent a paramount strategic resource for society and so forth for every type of organisation; therefore, offering reasonable and intelligent service to employees of an organisation is essential (Saidi Mehrabad and Fathian Brojeny 2007). In practice, the efficiency and quality of the matching process can be reduced by a number of internal and external factors, while recruitment is a lengthy and expensive process, and it is not always easy to identify skills needs or the right candidate because the information is limited (Broecke 2023).

"People analytics" (i.e. the use of data, statistical and quantitative analysis to drive human resources decisions) have been used for years to help companies automate, accelerate, and improve various stages of human resources management, including recruitment, and with the goal of achieving efficiencies and cost savings, faster and better matches, a reduction of human bias and error, as well as improvements in the quality of jobs of the workers involved in matching (Broecke 2023).

The use of AI in the employment process significantly increases efficiency in job matching because software can rapidly analyse large amounts of data to select the best-fitting job candidates, thus achieving unparalleled efficiency and saving time. Essentially, recruiting is the task of predicting — based on resumes, cover letters, LinkedIn profiles, tests and interview transcripts — which subset of applicants will perform best in the job, so a number of AI applications substitute capital for labour by automating prediction tasks, while still leaving the decision tasks to the human (Agrawal, Gans and Goldfarb 2019).

AI can be applied to recruitment and selection through the utilisation of datasets, algorithms, natural language (the ability of a computer program to understand human speech as it is spoken or written) and machine learning processing to analyse resumes, source candidates, match candidates to jobs, conduct and analyse interviews, and provide feedback. AI models can carry out human-like cognitive tasks (e.g., recognition, event detection, forecasting), learn from data, or even evolve and/or acquire abilities from interacting with data (Broecke 2023).

AI (machine learning and software) can optimise several key aspects of every recruitment procedure — job descriptions; search engines for online

https://doi.org/10.59954/stnv.546

recruitment; identification of applicants' skills, qualifications and responsibilities typically associated with a certain job title; the readability of individual job advertisements, as well as the uniformity of language and branding used across multiple job advertisements (Broecke 2023). Software solutions can further streamline recruitment by selecting suitable applicants based on job and organisational requirements (selection), identifying suitable jobs for applicants and correct job rotation with respect to organisational requirements and job classification, and determining the salary and benefits for the applicants based on their qualifications (Saidi Mehrabad and Fathian Brojeny 2007).

3.3 QUALITY IN JOB MATCHING

Labour market matching is costly, time-consuming, and suffers from imperfect information as well as bias and discrimination (Broecke 2023). Improvements in the efficiency and quality of this process are crucial to employers because their final goal is to find the best-suited candidate whose skills correspond to the job and who will remain sufficiently long in the position for which he/she was recruited. Applicants benefit from digitalised job searches because algorithmic software can shortlist available job openings and offer tailored job opening recommendations. The state also has a profound interest in high-quality job matching because, if done well, it decreases unemployment and social risks. Good labour market performance depends in part on the efficiency and the quality of labour market matching — i.e., the process by which workers are matched to jobs (Broecke 2023). This process involves a range of steps—from writing job descriptions and vacancies all the way to making offers and salary negotiations, passing through the application, shortlisting and interview stages (Broecke 2023).

OECD reports on artificial Intelligence increasingly being used in labour market matching, whether by private recruiters, public and private employment services, or online job boards and platforms. Applications range from writing job descriptions, applicant sourcing, analysing CVs, chatbots, interview schedulers, and shortlisting tools, all the way to facial and voice analysis during interviews (Broecke 2023). The quality of matching and jobseeker experience are the main features of advocating for the use of AI in job matching. It is often claimed that AI can mitigate human bias and prejudices in job matching and could potentially bring benefits to marginalised job seekers.

3.4 ACCELERATION OF THE PROCESS AND COST EFFICIENCY

Over the past decades, the recruitment process has increasingly digitalised due to the desire of employers to expand the pool of applicants beyond those who might find job advertisements in the employment agency or in local newspapers. The need to enlarge the reach of vacancy adverts is gradually being met by a number of websites specialising in online recruitment. Initial simple matching between employers and job applicants gradually evolved to include applicable filters to shortlist only jobs that are of interest to the applicant or those that correspond to his/her qualifications, then the options of predicting job adverts being displayed

to the job seeker and the optimisation of the matching, application and selection process were introduced and from that point on, numerous more sophisticated options aimed at improving and accelerating the job matching process.

The digitalisation of the job matching process and subsequent recruitment procedures have opened unprecedented possibilities for both employers and applicants. Their interaction has shifted to the digital sphere, reaching levels that were once difficult to imagine. This shift includes the integration of various platforms and web-based services to advance recruitment, such as professional social networks like LinkedIn, social media background checks done on Instagram or Facebook accounts of job applicants, or the possibility of communicating during recruitment procedures through applications or chatbots. Digitalisation has not only facilitated faster and far less expensive recruitment procedures but has also enabled the expansion of the pool of candidates, better matching of candidates' skills with job requirements and significant expansion of abilities to screen resumes in order to shortlist the candidates for interviews.

Job matching with AI is efficient and cost-effective because numerous tasks of recruiters have been outsourced to digital tools or applications that significantly reduce the necessary working hours that human resources employees would spend on screening and selecting resumes or job applications. In cases where applications do not correspond to the job vacancy, digital tools and software can easily detect gaps and eliminate unsuitable applications, while this task would require the use of many working hours for human employees.

3.5 ALLEVIATING THE ADMINISTRATIVE BURDEN OF EMPLOYEES OF EMPLOYMENT AGENCIES

Proponents of the integration of AI technology in the recruitment process highlight that wider use of digital tools and software could alleviate the administrative burden of employment agencies, eliminate repetitive and technical work such as screening a large number of job applications, perform checks on the submitted background documents, organise applications and schedule tests and interviews. The wider use of algorithmic operations allows employers to take on more strategic and innovative roles. Instead of screening a large number of job applications, employees can simply use available software and applications and consequently dedicate more time to strategic planning for the reduction of unemployment, activation measures or labour market gaps. Recruiters can also invest more time in higher-value tasks like rapport-building, interviewing and negotiating (Broecker 2023). If AI successfully reduces administrative burdens from recruiters, and if other aspects of the recruitment procedure improve, it could yield numerous benefits for employers, the labour market and job seekers.

4 REQUIRED PRECONDITIONS TO PREVENT ALGORITHMIC BIAS AND DISCRIMINATORY APPLICATION OF AI TOOLS

The European Commission has taken steps to facilitate trust and has focused on issues relating to ethics, safety, and fundamental rights, including the right not to be discriminated against, liability, the regulatory framework, innovation,

https://doi.org/10.59954/stnv.546

competition, and intellectual property (IP) (European Commission 2021). To that end, it formulated Ethics Guidelines for Trustworthy Artificial Intelligence endorsed within the Communication on Building Trust in Human-Centric Artificial Intelligence of 2019 and an Assessment List for Trustworthy AI (European Commission 2020). The Ethics Guidelines identified key principles and requirements for Trustworthy AI, and the Assessment List provided an operational framework to support the application of ethical guidelines by AI developers and users.

4.1 HUMAN-CENTRED VALUES — HUMAN RIGHTS AND ETHICS

Recent discussions surrounding the use of AI in recruitment procedures have inevitably raised issues concerning the dehumanisation of employment and potential risks to human-centred values (Broecke 2023).

The European Union has emphasised the importance of promoting the development of human-centric, sustainable, secure, inclusive and trustworthy artificial intelligence (European Commission 2021). Two crucial ecosystems identified by the European Commission are the ecosystem of excellence and the ecosystem of trust, both compliant with EU rules, including the rules protecting fundamental rights and consumers' rights, particularly those involving AI systems operated in the EU that pose a high risk. Building an ecosystem of trust should give citizens the confidence to embrace AI applications and give companies and public organisations the legal certainty to innovate using AI. The Commission has acknowledged and expressed willingness to address public concerns regarding the protection of fundamental rights, especially when citizens encounter information asymmetries in algorithmic decision-making, unintended effects or even potential malicious purposes. The Commission strongly supports a human-centric approach, as outlined in the Communication on Building Trust in Human-Centric AI and will also take into account the input obtained during the piloting phase of the Ethics Guidelines prepared by the High-Level Expert Group on AI (European Commission 2020).

The EU Ethics Guidelines put forward a set of seven key requirements that AI systems should meet in order to be deemed trustworthy. A specific assessment list aims to help verify the application of each of the key requirements: (1) human agency and oversight; (2) technical robustness and safety; (3) privacy and data governance; (4) transparency; (5) diversity, non-discrimination and fairness; (6) societal and environmental well-being and (7) accountability (European Commission 2020).

4.2 DISCRIMINATORY ALGORITHMIC DECISIONS

Algorithmic decisions are based on extensive input data selected for their ability to generate predictions of the most suitable outcome or the best possible result. The final results or decisions of the algorithm are entirely dependent on the quality of the input data. The input data itself is not discriminatory; discrimination can appear during the interpretation process due to erroneous, prejudicial or partial data (Sanchez 2021). Profiling job seekers in order to classify them according to parameters introduced in the algorithm may lead to discriminatory decisions, even when this is not overtly apparent (Sanchez 2021).

Machine logic does not always take into consideration the whole range of decisive factors which are crucial for making unbiased and non-discriminatory decisions. Algorithms can exclude certain population subgroups from targeted job advertisements, but they can also adopt subtler forms of exclusion. The more complex the algorithm, the harder it is to identify the source of discrimination or even its existence. Even more concerning may be AI tools in the hands of individuals or organisations actively seeking to enrich themselves in ways that have little concern for the rights or privacy of individual workers, consumers or citizens. (Peetz 2019).

According to O'Neil, algorithms are not neutral or unbiased; there are many examples of discrimination being unexpectedly built into decision-making processes through the use of algorithms (O'Neil 2016). She further claims that the models used could be opaque, unregulated, and incontestable, even when they're wrong and can easily become a "toxic cocktail for democracy" unless they are developed responsibly and regulated (O'Neil 2016).

In order to reduce discriminatory outcomes of algorithmic decisions, we need to apply so-called 'algorithmic equality' of the talent acquisition software to reduce algorithmic bias, which is the involvement of human expertise and human judgment, the ability to interrelate information and assess properly all competency-based examinations and verbal and nonverbal behaviour displayed during the recruitment process.

Promoting transparency in the use of AI in matching, e.g. by requiring recruiters and other organisations to inform job seekers and to obtain consent before using AI. One particular challenge in this area is acquiring consent that is meaningful, given the unbalanced power relationships that exist. Guaranteeing privacy, both in terms of collecting new data by AI tools as well as protecting individuals from having their personal information inferred by AI from social media and other types of big data. Combating bias and discrimination involves a range of instruments such as anti-discrimination law; data protection legislation (and, in particular, the right to transparency, to an explanation, and to contest automated decision-making); consumer protection legislation; and the continued monitoring of AI throughout its lifetime (Broecke 2023).

5 REGULATORY FRAMEWORK FOR ARTIFICIAL INTELLIGENCE

The artificial intelligence software developed for the employment process was created by private IT companies that recognised the labour market's need for the application of AI and promptly responded by providing tools for job matching, selection, and recruitment. Private IT providers developed commercial products and, in the absence of a specific applicable legal framework, were not primarily guided by the privacy infringements, protection and confidentiality of sensitive personal data, protection of fundamental rights or any other of the seven EC key requirements outlined for AI systems to be deemed trustworthy — human agency and oversight, technical robustness and safety, privacy and data governance, transparency, diversity, non-discrimination and fairness, societal and environmental well-being and accountability (European Commission 2020). The pace of AI development proved too fast for the regulatory framework to encompass all key elements of managing personal data and protecting

https://doi.org/10.59954/stnv.546

job seekers from privacy breaches. In this situation, the only possible way forward was *ex-post* regulation of applying AI solutions in employment.

Both the USA and the EU were trying to establish principles for regulating AI, being aware that failure to do so might have long-lasting consequences and create legal havoc. Thus, in November 2020, the USA released a set of government-wide policy principles for regulating AI, including a call for engaging in developing regulatory approaches through international cooperation (Broadbent 2021). A key feature of the initiative was a directive to agencies to initiate "dialogues" to promote compatible regulatory approaches to AI and US AI innovation while protecting privacy, civil rights, civil liberties, and US values (Broadbent 2021). The US perspective was that innovation would flourish in a transparent and predictable regulatory environment. At the same time, the EU embarked on putting in place an aggressive regulatory regime for AI through *ex-ante* regulatory procedures that require government permission upfront before innovative technologies are deployed. This approach was assessed as overly prescriptive and too generalised since AI has too many applications and forms for a one-size-fits-all regulation (Broadbent 2021). Moreover, there is a question of how such legislation would include previously developed innovative technologies.

Currently, efforts are underway to adapt existing and/or introduce new legislation to regulate AI more broadly, as well as collective agreements and attempts at national or international standard setting and other self-regulatory approaches, discussed extensively in OECD reports on the ethical risks of using AI in the workplace (del Pero, Wyckoff and Vourc'h 2022) and on AI and social dialogue (Krämer and Cazes 2022).

Questions of privacy, personal data protection, transparency and explainability became cornerstones of developing regional and national regulatory frameworks for AI. Privacy matters regarding the use of AI in recruitment are very contentious due to the personal information job applicants have to share when applying for a job and the fact that they have to accept the terms and conditions of IT companies that own recruitment platforms or programs or applications. Recruitment algorithm solutions, applications, and programs are predominantly privately owned, especially those that are the most successful and well-known. While private ownership over technological companies implies adherence to national, regional and international privacy legislation, the fast pace of the development of machine intelligence has outpaced those laws and regulations, leaving technological or virtual privacy insufficiently regulated. Thus, privately owned IT companies have a very large margin of appreciation for the use of collected personal and confidential information on job applicants. At the same time, private IT companies operate for commercial purposes and have profit at the centre of their interest. This means that some or a lot of personal data can be offered in the market for commercial purposes, mainly targeted advertisement, and this is how IT companies could make additional profit.

Another issue of concern regarding privacy is the use of social media data to infer protected characteristics, as Facebook likes could predict with a high degree of accuracy sensitive characteristics like gender, ethnicity, sexual orientation, religious and political views,

person's skin colour, sexual orientation, or political affiliation (Kosinski, Stillwell and Graepel 2013; Grassegger and Krogerus 2017). Image and voice recognition techniques are similarly being used to infer information about applicants' sexual orientation, race, age, and physical attractiveness (Chamorro-Premuzic et al. 2017; Dattner et al. 2019). The regulatory framework needs to address issues related to the protection of personal data and the privacy of users.

The transparency of automated decision-making is also contested as frequently job applicants and even recruiters do not possess sufficient information on many aspects of machine algorithms, like, for example, on possible profiling of candidates, the retention of personal data and possible re-use of them, assessed requirements during selection and transparent share of the selection decision. According to the OECD AI Principles, transparency can refer to disclosing when AI is being used and enabling individuals to understand how an AI system is developed, trained, operated, and deployed so that people acquiring or using these tools can make informed choices. Transparency, in this context, refers to the ability to provide meaningful information and clarity about the information provided and the reasons behind it (OECD 2019).

Explainability is another feature of big data solutions, and that refers to a feature of AI that enables people affected by the outcome of an AI system to understand how the decision was arrived at (OECD 2019). This entails providing easy-to-understand information to people affected by an AI system's outcome, enabling those adversely affected to challenge the outcome, notably — and to the extent practicable — the factors and logic that led to it.

The regulatory framework for AI needs to be enforceable, inclusive and adaptive, as a majority of AI solutions are privately owned and developed with a commercial purpose. It also needs to factor in all legal solutions developed within the framework of the EU General Data Protection Regulation (the right to transparency on the use of automated decision-making and legal bases for lawfully processing personal data, free, specific, informed and unambiguous consent). Additionally, it should incorporate a suggested broader set of privacy rights in line with the European Convention on Human Rights and other applicable international, regional and national human rights legal frameworks.

6 CONCLUSION

In the conclusion of this paper, research questions will be addressed. Firstly, the first sub-question, regarding how to harness the maximum benefits from the introduction of artificial intelligence in the employment process, will be discussed. The answer to this question derives from the research findings, emphasising that the recruitment process is probably the area of employment and labour relations which currently benefits the most from the application of artificial intelligence.

In regard to job seekers, it is thanks to machine learning, big data and applicable algorithms that job applicants have easier access to job advertisements, can benefit from tailored job vacancies and can apply to any job anywhere in the world online within seconds. Throughout the recruitment process, job seekers can easily communicate with potential employers through various social networks, chatbots, applications, emails and websites. All of these benefits can be optimised only in cases when applicants

https://doi.org/10.59954/stnv.546

are fully informed and have the right to get an explanation of the algorithmic operations and personal data use.

When it comes to employers, the benefits of using algorithms at the beginning of the recruitment process are multifaceted. They range from quicker and cheaper procedures to the possibility of doing better job matching and saving time by enabling a shift from purely administrative tasks to more strategic and substantial tasks. However, even with automated decisions for administrative tasks, employers who are searching for the best and the most talented workers have to carefully examine algorithmic recruitment services because of possible errors and the multiplication effect of mistakes in candidate screening. Later in the process, when more in-depth assessment is needed to decide whether the candidates are indeed suitable, the recruitment process should include human interaction because the use of AI in this phase could result in algorithmic bias and discriminatory application of big data. Subsequently, employers can disqualify high-quality candidates over minor and unimportant features that are detected by machine algorithms. Human evaluation of shortlisted candidates during the interview phase is crucial to ensure a human review of machine-based decisions on the initial vetting of job applications. Automated decision-making for recruitment should be avoided in line with the EU's General Data Protection Regulation, which grants individuals the right not to be subject to a decision based solely on automated processing. All machine learning decisions should be audited for morally and legally unacceptable decisions. Software solutions cannot interlink and think through various information about the applicant, do not assess properly overall formal and informal working experience and have difficulties assessing soft skills. This could easily lead to an infringement of the fundamental human rights of applicants through machine bias and discriminatory algorithmic processes. Therefore, employers have a role in ensuring proper evaluation and constant monitoring of the application of algorithms and machine intelligence.

From the state's perspective, the use of artificial intelligence in the employment process can tackle issues related to swiftly managing labour shortages and unemployment. Additionally, this approach decreases social risks and addresses numerous other areas, such as the reduction of poverty and increase of education attainment. The states so far have taken a passive role in AI development, allowing the private sector to self-regulate and self-manage. The development of machine intelligence is not only very demanding in terms of skills required to work on proper programs but also enormously expensive. Thus, the private sector took the lead and offered its solutions to private and state institutions such as employment agencies. State institutions, nevertheless, could have an important role in providing feedback for algorithm predictions and reduction of algorithm bias as they frequently interact with a large number of beneficiaries of public employment agencies.

The second sub-question is how to minimise negative aspects of the digitalisation of the employment process and ensure the non-discriminatory application of AI in the employment process and prevention of algorithmic bias. The proposed solution involves better regulation of the development and use of digitalised tools for recruitment. Legal

and regulatory frameworks need to be harmonised with existing human rights instruments. Legal safeguards should include proper monitoring of collected data, and further use would extensively manage to reduce risks stemming from technological innovations. Rather than trying to police the digitalisation of employment, regulators should create a so-called enabling environment that would enable quick recognition of the potential for innovation and progress and prompt reactions after a new program or application is developed to introduce minimum safeguards necessary to ensure the reduction of risks and enable uninterrupted commercial trade if the digital solution is on the market. This can only be done if public regulators are not detached from private companies but instead work together with them on improvements in the use of artificial intelligence in employment.

The third sub-question concerns the advantages of introducing a regulatory framework to the already fully functional and privately developed digital tools to facilitate employment. The response highlights benefits for all three involved parties. The benefit of introducing a regulatory framework for private IT companies, which mainly own technologically innovative solutions, is that it minimises legal actions against them and maximises the legal protection of job applicants' private data and trust in automated decision-making. For employers, a regulatory framework would enable human resources to function more easily as the majority of the main issues would be addressed, while the state would gain legal certainty and proper functioning of the labour market aimed at reducing unemployment and increasing commercial business.

In conclusion, the overall research question on how artificial intelligence can be used in the employment process to the benefit of job seekers and employers was addressed through specific points in this paper. It is clear that the benefits of using artificial intelligence in the recruitment process far outweigh the risks, and as such, at this point in their development, the only missing component is a better regulatory framework and more legal certainty for all involved, which would further reduce risks and possible negative outcomes of the use of digital tools.

ACKNOWLEDGMENT

This paper was drafted within the project PRAVOS of the Faculty of Law Osijek: IP-PRAVOS-3.

https://doi.org/10.59954/stnv.546

REFERENCES

Agrawal, A., Gans, J. S., & Goldfarb, A. (2019). Artificial Intelligence: The Ambiguous Labor Market Impact of Automating Prediction. *Journal of Economic Perspectives*, *33*(2), 31–50. https://doi.org/10.1257/jep.33.2.31

Broadbent, M. (2021). *What's Ahead for a Cooperative Regulatory Agenda on Artificial Intelligence?* Centre for Strategic and International Studies (CSIS). Research report. https://www.jstor.org/stable/resrep30085

Broecke, S. (2023). Artificial *intelligence and labor market matching*. OECD Social, Employment and Migration Working Papers No. 28. https://one.oecd.org/document/DELSA/ELSA/WD/SEM(2023)2/en/pdf

Chamorro-Premuzic, T., Akhtar, R., Winsborough, D., & Sherman, R. A. (2017). The datafication of talent: how technology is advancing the science of human potential at work. *Current Opinion in Behavioral Sciences*, *18*, 13–16. https://doi.org/10.1016/j.cobeha.2017.04.007

Dattner, B., Chamorro-Premuzic, T., Buchband, R., & Schettler, L. (2019). The Legal and Ethical Implications of Using AI in Hiring. *Harvard Business Review*. https://hbr.org/2019/04/the-legal-and-ethical-implications-of-using-ai-in-hiring. Accessed 12 December 2023

del Pero, A. S., Wyckoff, P., & Vourc'h, A. (2022). *Using Artificial Intelligence in the workplace: What are the main ethical risks?* Paris: OECD. https://doi.org/10.1787/840a2d9f-en

European Commission (2020). *White Paper on Artificial Intelligence* – A European approach to excellence and trust. https://commission.europa.eu/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en

European Commission (2021). *Fostering a European approach to Artificial Intelligence*. Annexes to the Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM%3A2021%3A205%3AFIN

Grassegger, H., & Krogerus, M. (2017, January 28). The Data That Turned the World Upside Down. *Vice*. https://www.vice.com/en/article/mg9vvn/how-our-likes-helped-trump-win

Hershock, P. D. (2020). *Humane Artificial Intelligence: Inequality, Social Cohesion and the Post Pandemic Acceleration of Intelligent Technology*. East-West Center. https://www.jstor.org/stable/resrep25513

International Labour Office (2017). *Future of Work*. Inception Report for the Global Commission on Work. Geneva: ILO.

Kosinski, M., Stillwell, D., & Graepel, T. (2013). Private traits and attributes are predictable from digital records of human behavior. *Proceedings of the National Academy of Sciences*, *110*(15), 5802–5805. https://doi.org/10.1073/pnas.1218772110

Krämer, C., & Cazes, S. (2022). *Shaping the transition: Artificial intelligence and social dialogue*. OECD Social, Employment and Migration Working Papers. OECD Library (OECD Social, Employment and Migration Working Papers, No. 279). Paris: OECD. https://doi.org/10.1787/1bb305a6-en

Lane M., & Williams, M. (2023). *Defining and classifying AI in the workplace*. (OECD Social, Employment and Migration Working Papers No. 290). https://www.oecd.org/publications/defining-and-classifying-ai-in-the-workplace-59e89d7f-en.htm

O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown Publishing Group.

OECD (2019). Artificial Intelligence in Society. Paris: OECD Publishing. https://dx.doi.org/10.1787/eedfee77-en

OECD (2022). *OECD Framework for the Classification of AI systems*. Paris: OECD Publishing. https://doi.org/10.1787/cb6d9eca-en

Peetz, D. (2019). Digitalisation and the jobs of the future. In D. Peetz (Ed.), *The Realities and Futures of Work* (pp. 83–112). Canberra: ANU Press. https://www.jstor.org/stable/j.ctvq4c16w.9

Saidi Mehrabad, M., & Fathian Brojeny, M. (2007). The development of an expert system for effective selection and appointment of the jobs applicants in human resource management. *Computers & Industrial Engineering*, *53*(2), 306–312. https://doi.org/10.1016/j.cie.2007.06.023

Sanchez, S. F. (2020). *Algoritmo y Discriminacion*. Paper for the European Congress of International Society for Labor Law and Social Security Law, Lisabon.

Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

How to cite: Špadina, H. (2023). Legal aspects of artificial intelligence in the employment process. *Stanovništvo,* 61(2), 167–181. https://doi.org/10.59954/stnv.546

Pravni aspekti umjetne inteligencije u procesu zapošljavanja

SAŽETAK

Uvođenje umjetne inteligencije u sve domene života najtransformativniji je proces u novijoj povesti. To je također jedan od najdinamičnijih procesa, a zbog prebrzog tempa tehnološkog razvoja regulatorni okvir nije mogao pratiti taj razvoj, i pitanja ljudskih prava, etike, transparentnosti, privatnosti, sigurnosti i odgovornosti su ostala neregulirana.

Pozitivni aspekti uvođenja umjetne inteligencije u proces zapošljavanja su učinkovitost i kvaliteta u usklađivanju radnih mjesta, digitalizacija i ubrzanje procesa, sposobnost obrade velikih podataka i usklađivanja tražitelja posla s dostupnim oglasima za slobodna radna mjesta, ublažavanje administrativnog opterećenja zaposlenika agencija za zapošljavanje i davanje strateških i inovativnih uloga. Sve je to neophodno u današnje vrijeme kada demografski izazovi u europskim zemljama dovode do povećane migracije radne snage i zahtijevaju promjene u procesu zapošljavanja.

U radu se istražuju aktualni izazovi umjetne inteligencije, odnosno kako postići vrijednosti usmjerene na čovjeka i pravednost upotrebe umjetne inteligencije tijekom procesa zapošljavanja, sprečavajući algoritamsku pristranost i diskriminirajuću primjenu alata umjetne inteligencije. Kako bi se iskoristile maksimalne koristi umjetne inteligencije moramo razviti regulatorni okvir koji bi bio provediv, uključiv i prilagodljiv (OECD), posebno znajući da je većina rešenja za umjetnu inteligenciju u privatnom vlasništvu i razvijena s komercijalnom svrhom.

KLJUČNE REČI

umjetna inteligencija, zapošljavanje, digitalizacija, zabrana diskriminacije