The EU Mutual Learning Programme in Gender Equality

Artificial Intelligence and Gender Biases in Recruitment and Selection Processes
12-13 November 2020

Comments paper - Greece

ösb Consulting
Ein Unternehmen der ÖSB Gruppe.

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This publication is supported by the European Union Rights, Equality and Citizenship Programme (2014-2020).

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Greece: Artificial Intelligence and Gender Biases in Recruitment and Selection Processes

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1. Recruitment and Selection – The landscape in Greece

No particular attention has yet been given, in Greece to issues regarding gender bias in recruitment and selection processes, or more generally bias that may result from the use of data-driven AI systems. Moreover, such issues have not yet been included in the public agenda, and no clear legal framework has been put in place to govern the use and operation of algorithms.

Below, we focus on forms of gender bias that might appear when AI is employed (implicitly or explicitly) to facilitate the recruitment and selection processes in Greek companies. We start from the mechanisms that these companies use to forward job advertisements to potential candidates (e.g. through social media platforms that often employ AI to form or enhance talent pools, or to ensure a rich set of applicants). We then touch upon the current trends in whatever concerns the use of Applicant Tracking Systems (ATS) and other AI-based recruitment software in Greek companies. We conclude with a collection of recommendations, hopefully useful for addressing gender bias in AI-based recruitment and selection processes.

1.1 Most Common Practices for Attracting Applicants

Greek enterprises use the following mechanisms, which may entail the use of AI, for attracting applicants in job postings.

Online job posting and exploitation of professional social media platforms. Most enterprises advertise their job postings through the web, often providing formal career portals where the applicants can upload their curriculum vitae and answer questionnaires. This information sometimes serves as input to the company's Applicant Tracking System (ATS) in order to get a first categorization and selection of the received applications. However, only few companies in Greece use ATS systems. The rest follow traditional recruitment mechanisms (that are not based on the use of technology).

Most companies in Greece make extensive use of social media platforms for advertising their job postings. LinkedIn appears to be one of the most popular social media platform for professional use with 79% penetration in companies' staff and it

also appears to be the most preferable site for job seeking[1]. Other popular social media platforms used for online job advertisement are Facebook, Twitter and Google+[2]. Many of these platforms use AI[3,4] to boost their customer's experience by e.g. advertising job postings and providing job recommendations to the customers, contributing to the enlargement of their professional network by making connection recommendations, etc.

Recruitment Agencies and non-profit organisations. Many recruitment agencies (acting at a national or international level) are active in Greece. Examples include Adecco, ManpowerGroup, KPMG, Advantage Consulting, Grecruitment, Alpha Plan, Antal, Cornerstone Athens, Icap Career, Bryq, and many others[5,6]. There is also a big number of web sites that post adverts for employers and job seekers. Examples are kariera, skywalker, jobfind, xe, aggeliopolis, neuvoo, ergasia, randstad, and others[7]. Some of these recruitment agencies employ software that may entail the use of AI.

Exploitation of the Internal and External Network. One of the most common approach in Greek companies' recruitment is the exploitation of the internal and external network of the company's contacts. In particular, they use their network of partners and employees, as well as informal networks of contacts to find appropriate applicants for leadership positions and positions of responsibility. Internal staffing is also very common: employees of a company are recruited in another post of the same company or move up the hierarchy. Sometimes decisions are made using ATS systems.

According to a joint study[8] by Adecco and the Athens University of Economics and Business, which is based on a sample of 133 participants (consisting of HR managers, HR directors, HR generalists, HR specialists, general managers, etc.), 65% declared that they use the Internet, as well as professional social media platforms (e.g. LinkedIn) in their recruitment processes, and 56% - that they take into consideration recommendations by the current company employees. Recruitment through agencies and non-profit organizations are less frequently used.

As far as the SMEs are concerned, 30% use social media for business purposes, with LinkedIn and Facebook be the preferred networks. Recruitment for the Greek State is performed through the Supreme Council for Civil Personnel Selection (ASEP), which is also gradually entering the digital age. This is achieved through the new National

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1   https://businessculture.org/southern-europe/business-culture-in-greece/social-media-guide-for-greece/

2   Elias Tsoukalas-Fougias, "HR Management: recruitment with the use of new technologies and the Internet", MSc Thesis, Athens, 2014 (supervised by Theodoros Katsanaves) – available online in Greek: http://dione.lib.unipi.gr/xmlui/bitstream/handle/unipi/6627/Tsoukalas%20-%20Fougas.pdf?sequence=2&isAllowed=y

3   https://engineering.linkedin.com/blog/2018/10/an-introduction-to-ai-at-linkedin

4   https://kambria.io/blog/how-facebook-uses-artificial-intelligence/

5   https://www.angloinfo.com/athens/directory/athens-employment-agencies-recruitment-442

6   https://www.thebalancecareers.com/top-best-job-websites-2064080

7   Sofia Kaltiri, "Internet Use for Personnel Search: A Case of the Greek Labor Market", Department of Accounting and Finance, University of West Attica, 2016 (supervised by Alina Chyz), http://okeanis.lib.puas.gr/xmlui/bitstream/handle/123456789/3013/log_13815.pdf?sequence=1&isAllowed=y (available in Greek).

8   https://www.adecco.gr/wp-content/uploads/2019/09/Talent_Attraction_Selection_Survey2019.pdf

Electronic Public Procurement System, which is designed to provide more transparency and less bureaucracy (but does not use AI technology). The Hellenic Manpower Employment Organisation (OAED) is the only public employment service online job-portal in Greece (its operation is not based on AI).

1.2 Applicant Tracking Systems (ATS)

The situation in Greece regarding the number of applications received for each position opening has dramatically changed the last ten years as a result of the financial crisis. The high degree of unemployment that Greece has experienced has also significantly increased the number of applications that companies and organisations receive for their job postings. This made apparent the necessity of employing Applicant Tracking Systems (ATS) that would help them to automate the processes of collecting, organising and filtering applicants. ATS are particularly popular in large (often multi-national) companies which manage simultaneous job openings and high volumes of applicants. Remarkably, 98% of the companies in Fortune500 employ ATS in their recruitment processes[9,10] and many of them are active in the Greek market. Some of these companies use their own ATS systems (e.g., Oracle, IBM, and others) and promote them to the Greek market.

1.3 Gender Bias Issues in Recruitment and Selection

Recent studies[11] have indicated different forms of gender bias that can be introduced through online job postings. One such form is *structural bias*[9], which may appear when forming the candidates' pool. Such bias can be introduced e.g. because different social media platforms may feature structurally different available candidates' pools. Structural bias may result from the use of AI, e.g. when forwarding job advertisements, as data-driven AI systems may reproduce stereotypes and existing gender biases in data.

Recruitment decisions influenced by social media profiles may also result in certain forms of bias. One example is e.g. *relational bias*[9], which may disadvantage people on the basis of their network of contacts. Given that some fields and job markets are male-dominated, it is highly probable that men are more well-connected to individuals in particular professions or with particular job titles. This may result in a biased target group, e.g. when advertising job postings, forwarding news, or building talent pools through social media platforms that employ AI. Remarkably, through such platforms, employers could also have access to personal information of the applicants, e.g., their age, sexual orientation, family status, or other sensitive data.

Gender bias may be reinforced through the way job adverts are written. Keywords in job adverts are often used to determine criteria which the AI then seeks to optimise.

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[9] https://www.cvexperts.gr/applicant-tracking-systems/

[10] https://www.jobscan.co/blog/fortune-500-use-applicant-tracking-systems/

[11] P. Fatourou, C. Hankin and B. Knowles, "Gender Bias in Data-Driven Artificial Intelligence Systems", manuscript, available at http://users.ics.forth.gr/~faturu/PolicyPaper-GenderDiscriminationAndAI.pdf

However, job adverts often contain female- and/or male-biased words[12,13]. This may result in reinforcing existing labour market inequalities.

Machine translation often introduces linguistic bias implying that men are more appropriate applicants for specific jobs and roles, thus reproducing known gender stereotypes[9]. Machine translation is a standard technique for increasing visibility of advertisements (including job advs) to potential candidates through well-known social media platforms that employ AI in their information forwarding mechanisms.

Large companies sometimes use tools that characterise the language of job advertisements as being gender neutral. However, these tools are not yet very common in Greece, and they should be adjusted to work for the Greek language. Moreover, recruitment questionnaires for facilitating initial screening, which are provided as input to ATS systems of companies, are usually designed without taking into consideration issues of gender fairness.

To the best of our knowledge, no actions are taken by the Greek companies to discover and/or address forms of bias as those described above. However, Law 4604 on promoting substantive gender equality, preventing and combating gender-based violence, which was adopted in March 2019, sets out measures for the use of gender-neutral language in official documents of the public administration, as well as provisions against gender stereotypes and discrimination in mass media and advertisements[14]. Thus, depending on how the policies determined in the Law, will take effect and to what extend they will be applied, they may contribute toward addressing (possibly implicitly) some of the concerns raised above.

We are not aware of publicly available studies on the topic of gender discrimination in selection and recruitment processes in Greece. Moreover, there is no evidence that public discussion on the topic is currently activated.

2. Policy Debates and Expected Trends

2.1 Legislative and Policy Framework – Statistics

The National Action Plan (NAP) on Gender Equality 2016-2020[15] provides the basic principles and strategic objectives that are considered fundamental to improve gender equality in Greece. Three of the NAP objectives could be considered relevant to this paper's topic: 1) supporting the employment of women and tackling the consequences of decreasing male employment with regard to gender identities and gender relations; 2) promoting gender equality in education, culture, and the media; and 3) achieving balanced participation of women in decision-making centers. However, gender equality - in respect of issues such as job advertisement and recruitment policies and the impact of modern technology on them are not touched upon in the NAP. Such issues are yet to be placed at the core of political discussion in Greece.

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12   https://recruitmentjuice.com/blog/how-to-eliminate-gender-bias-from-the-recruitment-process/

13   https://www.totaljobs.com/insidejob/gender-bias-decoder/insights/

14   https://eige.europa.eu/gender-mainstreaming/countries/greece

15   http://www.isotita.gr/wp-content/uploads/2018/02/National-Action-Plan-for-Gender-Equality-2016-2020.pdf

The legislative and policy framework regarding gender equality in Greece is successfully summarised[14] by the European Institute on Gender Equality (EIGE). The Greek Constitution, with its articles 4, 22, and 116, enshrine the principle of gender equality. Specifically, articles 4 and 22 ensure equal rights and obligations for all citizens regardless of sex, and the right to equal pay for work of equal value. Moreover, Article 116 states that 'There is no discrimination on grounds of gender if positive measures are taken to promote equality between men and women. The State shall ensure that the inequalities which exist in practice, particularly against women, are removed'. However, no legal framework exists regarding fairness or accountability issues in the use of algorithms.

The production of sex-disaggregated data in Greece is quite limited. Law 4604/2019 aims to enhance the dissemination of sex-disaggregated statistics by public services and legal entities but such data should be also produced for the private sector. The available statistical public data regarding online job advertisements and vacancies, as well as recruitment practices in Greece, is also limited.

2.2 Expected Trends

According to a study by CEDEFOP[16], Greek companies are becoming more familiar with new technologies. Although this takes time, AI may play a crucial role in recruitment in Greek business in the future. Moreover, employers are open to using new technologies to recruit talented people. However, cultural issues can be a major obstacle in adopting new technologies. For instance, Greek employers are hesitant to disclose information regarding their business practices and employees feel insecure to publish data about their employers.

Regarding the use of Artificial Intelligence (AI) in recruiting and HR, a joint study by Adecco and the Athens University of Economics and Business[8] indicates the following:

1. The big (often multinational) companies are more prone in accepting the use of AI techniques in their recruitment processes.

2. Not many companies in the sample implement modern AI approaches in their companies' recruitment processes. However, 32% of the companies that do not use AI approaches are willing to do so in the next five years.

Statistics on the use of new technologies in different stages of recruitment (collected among those who use AI technology), as well as statistics on the types of AI-based applications used are provided in Tables 1 and 2 below.

Table 1: Frequency of use of new technology in different recruitment stages

Use of new technology in different recruitment phases	Usage (%)
Interviews Conducting	86%
Interviews Scheduling, Managing Selection Process	57%
Assessment of applicants	43%
Initial Screening	43%
Reporting	29%
Employer Branding	29%

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16   https://www.cedefop.europa.eu/files/rlmi_-_mapping_online_vacancies_greece.pdf

Use of new technology in different recruitment phases	Usage (%)
Talent Pipeline	29%
Collection of needs and requirements from line managers	29%
Improvement of Candidate Experience	14%
Internal Movements, Succession Plans	14%
On boarding (training of new staff)	14%
Volume recruitment	14%
Sourcing (collection and sorting of required profiles)	14%

Source: https://www.adecco.gr/annual-talent-selection-trends/

Table 2: Frequency of use of AI applications in recruitment processes

Different types of AI applications	Usage (%)
Text analytics and voice mining (e.g. HireVue) for conducting interviews and analysing text and voice	86%
Integrated ATS Platforms (with assessment and decision making support)	43%
Social Media analytics to build employer branding	29%
Gamification in assessment	29%
Data Analytics Systems (providing capabilities of past data analysis to build ideal profiles per job)	14%

Source: https://www.adecco.gr/annual-talent-selection-trends/

3. Recommendations

3.1 How to address the potential risk of gender discrimination in recruitment processes

- Perform a comprehensive study to assess the situation regarding gender bias in recruitment and selection processes at a European and national level.

- Come up with a specific strategy to address gender bias in recruitment and selection processes, and with an implementation plan for achieving the goal. This will require a multi-stakeholder, multi-disciplinary collaboration and will draw on expertise from computer science, law, ethics, and social science amongst others. A common framework should be created which will act as a working environment and provide a common language to researchers and stakeholders from different disciplines for implementing the planned actions.

- Introduce quantitative and qualitative indicators for gender fairness in recruitment and selection processes and develop a functional mechanism for the continuous evaluation of the outcomes of the implemented measures.

- Issues such as openness and algorithmic transparency[17] must be taken into consideration when developing AI technology.

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[17] ACM Statement on Algorithmic Transparency and Accountability, January 2017, available at https://www.acm.org/binaries/content/assets/public-policy/2017_usacm_statement_algorithms.pdf

- Inflame political discussions on gender fairness in recruitment and selection processes.

- Include gender indicators to the companies' evaluation and provide certification mechanisms (e.g. take into consideration these indicators for the issuance and maintenance of the "Equality Mark"). The General Secretariat for Family Policy and Gender Equality has already initiated activity in this direction through the programme "SHARE: Promoting Work Life Balance in companies and a better sharing of care between men and women", which began in February 2020, in collaboration with the Research Centre for Gender Equality (KETHI) and MKO "Women On Top"[18].

- Initiate pilot projects for blind recruitment and other promising approaches.

- Increase the production of sex-disaggregated data, including data about the private sector and the recruitment processes at the national and European level. These data should be sent, regularly, to the appropriate authorities for evaluation and further action. In particular, ensure that companies maintain gender statistics regarding their employees and the new staff that they recruit every year and that these statistics are publicly available. Additionally, perform studies about gender fairness in recruitment and selection processes in the private and public sector and make them public.

- Collaborate with appropriate authorities (Ombudsperson and Labour Inspectorate) to monitor complaints on gender unfairness in recruitment and selection processes.

- Take actions for ensuring that the language used in job adverts is de-gendered. Indicative actions in this direction could be 1) release a guide to inclusive language and 2) provide free online tools to check whether the language in job advertisement is de-gendered.

- Ensure that online job adverts are posted in venues that target diverse audiences.

3.2   How to raise awareness of the issue of gender bias in AI

- Prepare guidelines and tips for companies, HR departments and employment agencies on how to eliminate gender bias from their recruitment processes and how to develop gender inclusive advertisements.

- Create a repository of best practices and other resources.

- Come up with the right structures to organise series of events and professional development seminars for AI technology developers, employers and job seekers.

- Collaborate with the appropriate authorities to deliver awareness-raising training to students, employers, employees and the public. Training should include 1) gender equality and gender discrimination issues, and 2) ethics and social responsibility,

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[18]   https://womenontop.gr/en/

at all levels of education. Moreover, ensure that AI-related technical education is included in university programs curricula.

- Provide documents describing ways for using new technologies and digital skills to favour women's employment and reduce gender inequalities in labour markets.

- Organise special training programmes to increase awareness of the public on the impact that data-driven AI technology may have on their lives.

- Take measures to ensure that awareness of ethics and gender fairness are enhanced in all levels of education.

- Mandate that people have the right to know the impact of AI systems in their lives.

- Ensure that people are informed about the accountability implications of using AI systems.

4. Sources of Information

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Acknowledgments

paper, and statistics. I would also like to thank Ms Tzortzi from the General Secretariat of Family Policy and Gender Equality for her collaboration.