

A dark blue vertical bar runs along the left edge of the slide. A blue arrow-shaped banner points to the right from this bar, containing the text 'A. Y. 2021-2022'. In the bottom-left corner, there are several thin, curved lines in shades of blue and grey that sweep upwards and to the right.

A. Y. 2021-2022

BIASES IN HIRING DECISIONS

Business and Project Management project
work

Pietro Tempesti, Benedetta Tessa

UNIVERSITY OF PISA, ARTIFICIAL INTELLIGENCE AND DATA ENGINEERING

TABLE OF CONTENTS

INTRODUCTION.....	2
HIRING DECISIONS.....	2
WHAT IS A BIAS?	2
PROCEDURE	3
SCRAPING AND KEYPHRASES EXTRACTION.....	3
RESULTS	3
THE MIT SLOAN SCHOOL DATASET	3
RESULTS OF THE SCRAPING.....	3
HOW SOCIAL MEDIA AFFECT THE HIRING PROCESS	3
GENDER BIAS	4
REFERENCE LETTERS IMPACT IN HIRING DECISIONS.....	5
EMOTIONAL INTELLIGENCE	6
MENTAL HEALTH	6
CONCLUSIONS	7
References	7

THE CODE USED FOR THE ANALYSES DISCUSSED BELOW IS STORED IN THIS GITHUB REPOSITORY:

https://github.com/PieTempesti98/biases_in_hiring_decisions

ABSTRACT

This study aims to understand which are the most studied biases in the hiring process according to the literature.

We perform topic extraction from the Scopus database and from the MIT Sloan School material provided by our University looking for material related to the hiring decisions to address, and then we search in literature studies that suit best with the extracted topics. After this collection phase, we review the papers to find and deeply understand the biases.

This research allows us to understand what are the critical issues in the hiring process according to the existing literature, and what solutions can be proposed to the HR departments to better manage their decisions.

INTRODUCTION

HIRING DECISIONS

The hiring decision is one of the final steps in the recruitment process.

Typically, it is the step in which the hiring managers decide who hire between the candidates that have passed different stages of screening for a job position.

These screening stages can be automatic application reviewing, interviews, background/reference checks, and/or some tests.

After all these recruitment steps, the HR department has obtained all the information needed to decide if a candidate can be the best choice for the firm.

It is crucial for the hiring managers to make the best decision at this stage, so all the redundant information and feelings must be removed, but usually this is not a simple task and there may be interference with the total neutrality of the hiring decision. These issues, often unconscious, are called biases, and their identification and handling are the main topic of this paper.

WHAT IS A BIAS?

Although diversity and inclusion have become a hot topic when it comes to hiring, many decisions are still biased.

Let's try to better understand what a bias is in this case: It's the feeling or opinion we have towards a candidate when deciding whether they're right for a job or not.

This inclination, however, is often implicit; hiring managers, in fact, can make quick judgements based solely on first impressions without considering skills or abilities and they don't even realize it's happening most of the time.

Internalized racism, sexism and ageism also play a big role.

Bias mostly happens during the screening phase, although the opinion made in this phase may influence later stages.

Bias can have different natures.

Some are due to the fact that sometimes managers may be too keen on superficial factors such as personality traits, physical appearance or even number of tattoos which may lead in subjectiveness overshadowing objectiveness.

Sometimes they also have good or bad feelings about a candidate and can't even explain why, all they do is trust their instinct.

Others are caused by the concept of affinity, since by nature humans tend to surround themselves with people like them and to which they feel have more in common, hence recruiters are biased towards candidates that have for example a similar background, upbringing and interests as them.

So, in the light of those considerations, our main question is: which are the main biases? What's the reason behind their origin? But most importantly, what can we do to reduce them?

To answer those questions, we exploited the existing literature and papers.

PROCEDURE

SCRAPING AND KEYPHRASES EXTRACTION

We collected data through scraping and reviewing of the given dataset.

We scraped papers from Scopus which provides a set of API thanks to which we can easily access to the title and the abstract of the papers.

We performed a keyword extraction on the data scraped by scopus, using *nltk* and *yake* as natural language processing libraries, to preprocess and analyze the content of the papers.

Finally, we use the keyphrases extracted to address our research in the hiring decision biases topic.

In addition, as stated before, we analyzed the MIT SLOAN SCHOOL papers thanks to nlp techniques.

Here's our workflow:

1. Get the full text
2. Preprocess it by removing stop words, punctuations and performing lemmatization
3. Extract top 10 keywords using YAKE keyword extraction library
4. Checked whether that paper was useful for our goal or not given the keywords

RESULTS

THE MIT SLOAN SCHOOL DATASET

After our topic extraction process, we couldn't find any useful material inside the provided material, so every further discussion will be solely based on the results obtained via web scraping.

RESULTS OF THE SCRAPING

We scraped about 5000 papers from the scopusAPI, and then we extracted the top 10 main topics from each one.

The following word cloud shows the most frequent topics in our scraped dataset: we decided to focus only on the frequent topics that in our opinion may suit better with our case study.

These are the social media, gender biases, recommendation letters, emotional intelligence and employee innovation, and mental health.



HOW SOCIAL MEDIA AFFECT THE HIRING PROCESS

The rise of social media in the last year changed the way in which people present themselves to the society and express their thoughts publicly.

This new kind of information can be used by the hiring manager during their decision, but how this can affect the applicant evaluation, and is there a risk for introduction of biases? Also, how applicants respond to the

different social media screening policies? Can they update their social profiles for considering the importance of their social presentation for the hiring managers?

In research made by Nuno Melão and João Reis we can find lot of information about the point of view of the Hiring managers.

First, the social media screening is mostly used as complementary to curriculum screening and background check, and it is a useful tool to gather effortlessly information difficult to obtain in other ways and reduce the risk of hiring applicants with a potential negative impact on the organization.

This last aspect can potentially introduce a bias because some HR professionals interviewed stated that the social media screening can lead to not invite an applicant to an interview, if in their profile is found some inappropriate behavior or some information indicating that the applicant is inappropriate; also, screening a social profile recruiters can come across personal information about the candidates (such as gender, age, sexual orientation, etc.) that can contaminate hiring decisions.

The paper proposes training, common sense, and internal policies to limit the access to personal social media as possible solution for the issues.

About the perception of job applicants of the different policies about the social media screening, Chieh-Chen Bowen, Brent A. Stevenor and Sierra G. Davidson conducted a study on how different policies are perceived by the job seekers, and how they may pursue employment following the firm's policies.

The results show that while using job relevant information from professional social media is largely accepted, people react unfavorably when firms used their personal social content in an out-of-context way. In addition, in 24 states of the USA is permitted by law to request applicants' credentials for their profiles, and this policy evokes negative reactions even from highly agreeable candidates, decreasing their intention to pursue employment with the company.

This leads to a reduction of the job applicants pool, which has devastating effects on the quality of new hires, so firms may establish policies that find a point of equilibrium between the information gathered and the perception of the applicants.

GENDER BIAS

This should come as no surprise since it's one of the most discussed topics when in comes to bias in the workplace.

Unfortunately, this is already present in the earliest stage of job recruitment, which is the job description. It has been proved how words like "determined" or "competitive" attract mainly male candidates since we implicitly think of such words as more masculine.

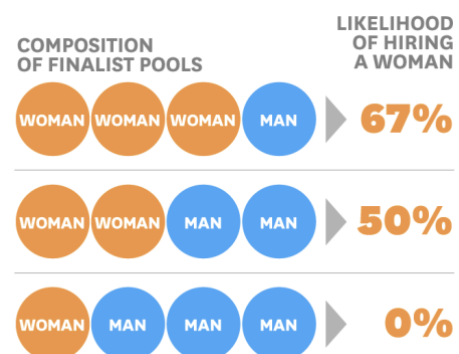
Harvard even developed a test showing how biased you are towards certain words concerning gender stereotypes: <https://implicit.harvard.edu/implicit/user/agg/blindspot/indexqc.html>

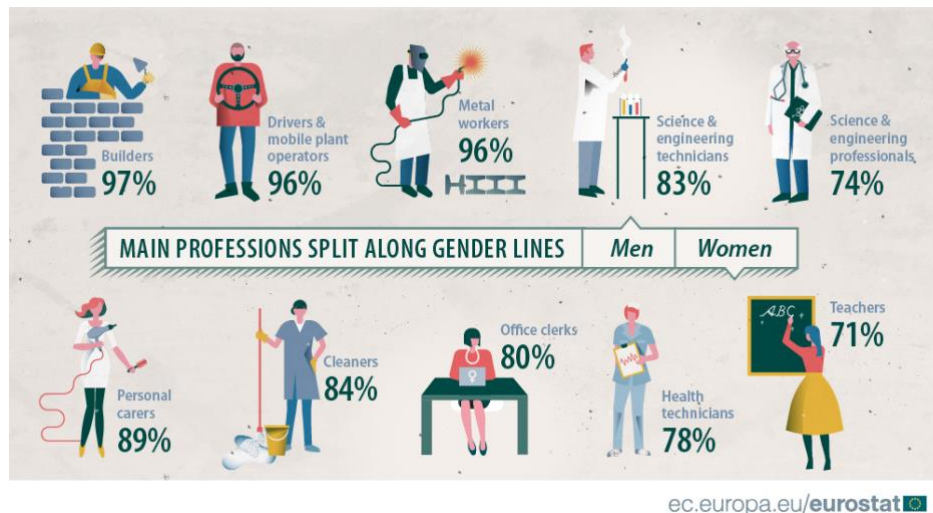
It can show how strongly we unconsciously associate the word "female" with concepts regarding family and "male" with concepts regarding career.

Because of this implicit connection, recruiters will be biased towards hiring male candidates.

Despite this gender stereotypes also lead to the perception of jobs more suitable for men and other for women

Historically, women have often studied different domains than men. For example, women have been excluded from studying scientific and technological subjects. Even within a field, women and men differ in what they have interest in studying, with women lean towards social science, development, health, and family.





For example, within the field of Computer Science, there is a preference towards human-machine interaction rather than AI. Within Economics, not many women lead studies on asset pricing, monetary economics, and economic fluctuation and growth but that's not the case for developmental economics, and health economics.

We can also see this bias in leader recruiting and there is an underrepresentation of female in charge of leading positions.

There are many reasons why. Here's some:

1. Top management and executive positions are believed to necessitate characteristics stereotypically associated with men.
2. There is a form of prejudice resulting in women not being willing to pursue higher position in the workplace since managers treat female subordinates differently than male ones. This can result in offering women less challenging work assignments, less training and development, less career encouragement, and less support for a work-life balance discouraging a female ambitions and aspirations.
3. Researches also show that also decision makers' political ideology has an impact on gender bias. It's not surprising that the more conservative the recruiter is, the more will be set in tradition, hence will see a female leader as a threat to the preexisting status-quo. Also, they will feel more anxiety when talking to women.

REFERENCE LETTERS IMPACT IN HIRING DECISIONS

About the impact of the reference letter in the hiring process, the results showed by a study made by Martin Abel, Rudolf Burger and Patrizio Piraino are really interesting for our case study.

The practice of submitting referral letters with an application is largely absent, especially in entry-level jobs.

In the study, three experiments were conducted to establish if the usage of standardized reference letters can create value for either the applicants and the hiring managers, and then to establish why this practice is poorly used.

The obtained results show that attaching a letter to an application increases the probability of a callback by the firm by 61%, 89% if we consider only the women. Also, the experiment shows that recommendation letters usually contain information about the applicants' skills that are not visible using the standard hiring techniques.

In the sector analyzed by this study, the number of applications sent with a reference letter bundled is very poor (~1%): in most of the cases, job seekers don't ask to the former employer the letter, predicting a negative response.

One other relevant result from the study is the importance of the content of the reference letters: most of them are not exhaustive, and some crucial information like skills, work position, responsibilities, duration, and reason of termination of the employment are missing.

In conclusion, we can assume that the reference letters are one of the most important instruments for the hiring manager in their decisions, because they can show some unperceived skills of a candidate and reduce the gender bias (the callback rate between men and women with a recommendation letter is very similar in the experiment).

A crucial problem can be the introduction of a bias based on the presence/absence of a reference letter, which can create disadvantages for people without work experience.

EMOTIONAL INTELLIGENCE

Emotional Intelligence is the ability to perceive, control and evaluate emotions; obviously this kind of skills are useful in many different working roles, so it is crucial for recruiters and hiring managers to evaluate this trait in applicants.

A crucial aspect for companies is innovation, meaning how they are able to reinvent themselves not to appear obsolete compared to their competitors by introducing new ideas, workflows, products and so on.

According to an article written by Jack Kelly, workers with higher Emotional Intelligence tend to make better decisions, maintain their cool under pressure, resolve conflicts, work well with others and demonstrates leadership abilities.

This open-mindedness and emotional intelligence can be very useful to reduce bias in the hiring process, since recruiters will tend to focus more on how a certain candidate may represent an important asset for their company rather than their gender, age, upbringing and so on.

If anything, they find strength in diversity.

This is opposite to the so-called similarity attraction bias, very common in the hiring decision process.

Here a manager is more inclined to hire candidates we view as being like us or having similar traits or characteristics as them, even though they have little to do with the requirements of a specific job.

Seen the benefits that emotional intelligent workers can bring to a workplace, it becomes crucial to correctly evaluate this trait during the hiring process.

In a study made by Donald H. Kluemper, Benjamin D. McLarty, Terrence R. Bishop and Anindita Sen we can see how it is important to combine different types of evaluation of EI, often combined with extraversion and General Mental Ability, using selection tests and evaluation assessments to correctly predict the performance of the applicants during job interviews, improving the results obtainable using only one of the two methods to screen and evaluate candidates.

MENTAL HEALTH

Hiring can be perceived as a very risky process because of the limited amount of information recruiters have about the candidates.

To reduce such risk, employers are resultant to hire applicants whose productivity is uncertain; among this we have candidates who disclose mental health problems.

Researches show how mental disabilities are seen much worse than physical ones, because of all the stigma and negative prejudices about this topic.

A similar treatment is reserved to ex-convict or people who had trouble with the law.

Some common believes are, for example, that they are unpredictable, dangerous, incompetent, unstable and that they are the ones to blame for their condition.

For example, it was shown that people with schizophrenia are 6-7 times more likely to be unemployed than the general population with a 70-90% unemployment rate

Another issue is that they rarely know the reason they weren't chosen therefore they might have little knowledge of the discrimination against them.

They might think it's because they lack skills when it's reality most of the time skills are not taken much into account.

Even if they are and the candidate it's suitable for the job in question, the mental illness or the criminal record is a deal breaker.

A common misconception is that a person this background has little to no hope for recovery, keep worsening every day and therefore won't be performant on the workplace.

This couldn't be further from the truth since the actual problem it's definitely the opposite.

The aim for a person in therapy, as a matter of fact, financial security, reducing un-structured leisure time, increasing self-worth, and improving interpersonal skill and having a good and self-rewarding job is indeed beneficial.

In reality, continuous rejections, discrimination and stigmatization represent a barrier for a full recovery and will lead to a worsening of their mental state.

Many studies, however, showed how companies who have experience in hiring disabled employees don't perceive much the risk and won't make a big deal about the physical or mental state of the candidate since they are more aware about the different conditions and only see the potential of their employees.

Many employers are also unaware of having hired people with mental illnesses because this is an information not everyone is willing to disclose, so it's clear that this kind of disability is not a limit.

Raising more awareness about all the false and negative stereotypes could definitely help to get rid of this bias.

CONCLUSIONS

This paper shows different studies about what can affect the hiring process, their origin, and possible solutions.

The first possible solution to mitigate the overall bias effect is specific training for the HR teams when a bias is identified inside the hiring process, and leverage also on the common sense of the individuals.

Another possible solution resides in anonymous recruitment. Although it assures that managers focus on candidates' skills and qualifications, it may not favour candidates from different demographics to accumulate skills and qualifications at an equal rate. Hence, anonymized procedures may advantage social groups that are already advantaged in the labor market.

Obviously, there are more potential biases hidden in hiring decision other than the ones that we analyzed, and they can be topics for future researches and integration.

References

- Chieh-Chen Bowen, Brent A. Stevenor, Sierra G. Davidson - How people perceive different types of social media screening and their behavioral intention to pursue employment, Computers in Human Behavior Reports, Volume 3, 2021, <https://www.sciencedirect.com/science/article/pii/S2451958821000373>
- Nuno Melão, João Reis - Social networks in personnel selection: profile features analyzed and issues faced by hiring professionals, Procedia Computer Science, Volume 181, 2021, <https://www.sciencedirect.com/science/article/pii/S1877050921001307>
- Martin Abel, Rudolf Burger, Patrizio Piraino – The value of reference letters – experimental evidence from South Africa, 2021, https://scholar.harvard.edu/files/abel/files/abel_jmp_reference_letters.pdf
- Jake Kelly - Why hiring managers seek people with high levels of emotional intelligence, Forbes, 2020, <https://www.forbes.com/sites/jackkelly/2020/10/31/why-hiring-managers-seek-people-with-high-levels-of-emotional-intelligence/>
- Donald H. Kluemper, Benjamin D. McLarty, Terrence R. Bishop, Anindita Sen - Interviewee Selection Test and Evaluator Assessments of General Mental Ability, Emotional Intelligence and Extraversion: Relationships with Structured Behavioral and Situational Interview Performance, Springer, 2014, <https://link.springer.com/article/10.1007/s10869-014-9381-6>
- Vegar Bjørnshagen, Elisabeth Ugreninov - Labour market inclusion of young people with mental health problems in Norway, Elsevier, 2021, <https://www.sciencedirect.com/science/article/pii/S1875067220300481>
- Crosby Hipes, Jeffrey Lucas, Jo C. Phelan, Richard C. White - The stigma of mental illness in the labor market, Elsevier 2016, <https://www.sciencedirect.com/science/article/pii/S0049089X15001969>
- Stijn Baert, Sarah De Visscherea, Koen Schoorsaf, Désirée Vandenberghe, Eddy Omeya - First depressed, then discriminated against?, Elsevier, 2016, <https://www.sciencedirect.com/science/article/pii/S0277953616303033>
- Lalatendu Kesari Jena, Sumaya Goya - Emotional intelligence and employee innovation: Sequential mediating effect of person-group fit and adaptive performance, Elsevier, 2022

- <https://www.sciencedirect.com/science/article/pii/S1162908821001079>
- Lanu Kim, Daniel Scott Smith, Bas Hofstra, Daniel A. McFarland - Gendered knowledge in fields and academic careers, Elsevier, 2022,
<https://www.sciencedirect.com/science/article/pii/S0048733321002079>
 - Burak Oc, Ekaterina Netchaeva, Maryam Kouchaki - It's a man's world! the role of political ideology in the early stages of leader recruitment, Elsevier, 2021,
<https://www.sciencedirect.com/science/article/pii/S0749597820304039>