Would you Like to Have Your Social Skills Assessed by a Softbot? – Al-Supported Recruitment Processes

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Abstract: In parallel with the increased use of Artificial Intelligence (AI) in recruitment processes, there is also an ongoing discussion on the dehumanisation in automated recruitment. On one hand Al-based recruitment has the potential to reduce human bias, on the other hand there are parts of the process that still need human judgement. Another concern is that the identified dehumanisation could harm the relationship between employees and employers. Research indicates that Albased technologies definitely have the potential to increase the efficiency of the recruitment process by replacing humans in time-consuming tasks. Less research has been conducted on the human perceptions about Al-based recruitment. In a time when Al-based recruitment tools are used in a rapidly increasing number of companies and organisations, it is important to better explore the human side of the process. Therefore, this paper investigates: What are the perceptions of the job candidate conditions in automatised and Al-based recruitment processes? This study was conducted with a qualitative approach with data gathered from candidates and recruiters that all had experiences from Al-based recruitment processes. Four candidates and two recruiters were chosen with the idea of a purposive sampling. Answers from six audio recorded semi-structured interviews were categorised in a deductive thematic analysis. The theoretic lens for the study was the Model of Applicant Reaction to Selection. Findings showed that the informants had a negative attitude towards the dehumanised recruitment process. The most obvious finding was the general critique towards the Al-based assessment of candidates' social skills. At the same time, the majority of the informants agreed that AI-based recruitment tools have the potential to make time-consuming administrative tasks more efficient. Only one informant was willing to go through a completely AI-based recruitment process, and all informants pointed out different ways in which the recruitment tools need to be improved. The conclusion is that the AI-based recruitment tools must be made more transparent and used as a support for decision-making rather than being the decision maker. The recommendation is a hybrid solution, where Albased tools are used to assist and create the basis for well-informed human decisions.

Keywords: recruitment process, recruitment tools, artificial intelligence, dehumanisation, model of applicant reaction to selection

1. Introduction

The 21st century has had a rapid development of technology that can be used for automatised recruitment processes (Chapman & Webster, 2003). Today, many companies and organisations use artificial intelligence to optimise automation recruitment and business revenue (Zhang & Yencha, 2022). In the ongoing digitalisation there is a fast development of recruitment tools that could retrieve information and to provide advice for human resource (HR) units. Algorithmic decision-making has become a frequently used new source of advice in HR recruitment and HR development. Companies and organisations implement algorithmic decision-making to save costs and increase efficiency and objectivity. At the same time algorithmic decision-making might also lead to unfair treatment and implicit discrimination. (Köchling & Wehner 2020)

With the described development of general digitalisation and AI-based recruitment processes the average time between application and employment has decreased from four months to four weeks (Wilson & Daugherty, 2018). CV screening, intelligence testing and interviews conducted online in video conference systems where AI has been implemented (Hemalatha et. al., 2021). According to Yam and Skorburg (2021), it was expected that automated selection procedures should eliminate prejudices and human bias, where appropriate candidates can be found in a rapid process. To what degree these new recruitment tools are successful, is a new research field with a constant discussion on discrimination and unfair treatment. Several studies report that biased training data is one of the most frequent reasons to discrimination in AI-based recruitment processes (Kumar et. al., 2021), with lack of data from underprivileged groups as a contributing factor (Pessach & Shmueli, 2021).

The negative impact from Al-based recruitment algorithms has initiated several research studies on ethical aspects (Yam & Skorburg, 2021). An emerging research field that has resulted in recommendations and guidelines to support the development of Al-based recruitment tools to its full potential (Van Esch, Black &

Ferolie, 2019). However, the majority of the earlier research had a focus on the organisational perspective only. Less research is conducted on the job applicants' conditions in automated and Al-based recruitment processes (Zhang & Yencha, 2022). This is the research gap addressed in this study, that has the aim of exploring and discussing the current perceptions about Al-based recruitment. In this study, where job applicants are called candidates, the overall research question to answer was: "What are the perceptions about job candidate conditions in automated and Al-based recruitment processes?"

2. Al-based recruitment

Recruitment is a stepwise process for companies and organisations where the first step is about sourcing, and how to reach out and get attention from presumptive candidates (Van Esch, Black & Ferolie, 2019). In the second step, after candidates have submitted their applications, their CVs should be assessed to find the most suitable with the relevant qualifications. Finally, a third step with interviews and other complementary tests before the offer of employment for the chosen candidate (Chapman & Webster, 2003). Traditional recruitment based on human experience and intuition has more and more been replaced by automated and Al-supported recruiting. One argument for automation is efficiency, another is to remove human bias. However, there are researchers that argue that Al-supported recruiting rather increases the bias, than the opposite (Zhang & Yencha, 2022).

The first sourcing step could definitely be reinforced with Al-based algorithms scanning huge amounts of data on the Internet. An example of a platform that provides data is LinkedIn, used by many companies and organisations to efficiently find a large number of candidates (Kim & Heo, 2021; Yam & Skorburg, 2021). In the second assessment step, Al techniques such as machine learning and natural language processing are used to extract information that can be further evaluated. This is conducted on the parts of the application where the candidate describes his/hers personality, intelligence, social ability, and leadership skills (Zhang & Yencha, 2022). The interview process has also been Al-assisted during the last years, and Kim and Heo (2021), describe how Al-assisted video interviews are used in Japan. The video recordings are analysed with face and voice recognition techniques. A method based on research that claims that it is possible to estimate the candidates future work performance by their facial expressions, voice, and their choice of words (Kim & Heo, 2021).

More frequently used are chatbots on web pages to assess details in the candidates CVs. An example of a big company that uses chatbots in the recruitment process is IKEA (Kumar et. al., 2021). Another emerging trend is to use various types of recruitment tests that should analyse the candidates' domain knowledge, cognitive ability, and also their personality. Al is not only used in the test analyses, but also to give fast feedback to the candidates (Fritts & Cabrera, 2021). Some are neuroscientific tests that are carried out in gaming sessions, where the players' choices in the game are analysed with Al techniques, to find the most suitable candidates (Van den Broek, Sergeeva & Huysman, 2020).

3. Theoretical framework

Studies on recruitment have traditionally focused on examining the process from an organisational perspective. However, there are other perspectives which are equally important, an example is examining the recruitment process from the candidates perspective. A reason for this emerging research field is that candidates also make an important choice in the process, where they want to work. Therefore, various models have been developed to better measure and estimate candidates' perception and reactions to the selection process (Hausknecht, Day and Thomas, 2004).

The term 'applicant reactions' has been used to refer to the growing body of literature that examines the attitudes or perceptions that individuals have regarding employment processes. One of the first theoretical models describing candidates' attitudes toward the hiring process was presented by Gilliland (1993). An updated model of applicant reaction created by Hausknecht, Day, and Thomas (2004) builds on the initial theoretical framework from Gilliland (1993). Their model includes additional factors and aspects. Among them are selection procedures, self-perceptions, and a variety of attitudes and behaviours. Applicant perceptions also include how they view the various dimensions of organisational justice, that is, thoughts and feelings about testing and broader attitudes about testing and selection in general. Finally, researchers have explored the possibility that prior work experience or familiarity with test situations may help explain applicant perceptions (Truxillo, Bauer, and Sanchez 2001).

A variety of perceptions held by candidates in a traditional recruitment process have previously been studied (Hausknecht, Day and Thomas 2004). It includes procedural justice, distributive justice, interpersonal justice, informational justice, test motivation, test anxiety, attitudes to tests in general and attitudes to selection process in general (Hausknecht, Day and Thomas 2004). Gilliland (1993) suggested that applicants' perceptions of fairness directly influence subsequent attitudes and behaviours both during and after employment. For example, the models predict that applicants who feel they have been treated unfairly during an interview would be less likely to accept a job offer or recommend the employer to others.

Hausknecht, Day, and Thomas' (2004) updated model specifies four broad factors from previous literature. These are the applicant's previous experience and expectations of employment. There are few occasions when these factors have been measured and even fewer attempts have been made to estimate simple relationships with other factors. (Hausknecht, Day and Thomas 2004). Gilliland (1993) mentions that procedures in recruitment have a strong connection with the candidate's perception of fairness in the recruitment process. Two of them are number of attempts per recruitment test, communication between recruiter and candidate. In particular, face validity has been studied extensively in previous research (Hausknecht, Day, and Thomas 2004). Face validity is a measure of how well a test is able to predict job performance. There are studies who suggest that applicants will perceive selection as fairer if recruitment tests have a higher face validity (Hausknecht, Day and Thomas 2004).

Several studies mention other aspects in the recruitment process that can influence perceptions of the selection process among applicants. Among them are the length of the selection process and actual test results. Therefore, when the recruitment process does not take long and when applicants receive positive results the candidates will have a positive perception (Hausknecht, Day and Thomas 2004). Providing applicants with an adequate explanation of the use of selection tools and decision making can also create positive perceptions. In addition, studies have suggested that applicant perceptions may be positively related to perceived ease of the test and transparency of the recruitment process (Hausknecht, Day, and Thomas 2004). Perceptions formed by past experiences influence the overall perception of general fairness and general attitudes toward testing and selection. (Gilliland 1993).

There are three levels of selection context which include authentic, hypothetical and descriptive context. Studies conducted in authentic sample contexts involve actual job seekers applying for positions with real companies. This study will only examine authentic sample contexts (Hausknecht, Day and Thomas 2004). Researchers have typically studied the process at one of three stages. The first stage is pre-application, where the candidate learns about the job and the organisation and interacts with the company for the first time. The second stage is usually some form of assessment to determine qualifications and job requirements using interviews or tests. In the final stage, feedback occurs and test results. Which potentially leads to an offer or rejection and feedback of performance. The last stage is relevant to this study. It is likely that the relationships between applicants' perceptions of the selection process and attitudes towards the organisation may differ depending on the phase the applicant is in (Gilliland 1993).

The assessment of perceived predictive validity is also made from the test taker's perspective and involves beliefs about whether people who score better on the test also perform better on the job. In the current literature, perceived predictive validity is an individual's assessment of the predictive ability of a selection tool. Perceived predictive validity is an essential factor for candidates' perceptions according to Hausknecht, Day and Thomas (2004). In general, interviews and work tests are perceived positively by applicants because there is usually a close connection between the content of the selection system and the work tasks, whilst cognitive tests and actual work tasks are often seen as less correlated. (Hausknecht, Day and Thomas 2004).

The various factors that influence how a candidate perceives the selection process are, as mentioned, a number of different factors that can influence each other. The factors that were relevant to achieve the purpose of this study have been used to create a defined model. What were considered to be relevant factors were points directly linked to the candidates' perceptions. The shortened version of the existing model is illustrated in Figure 1.

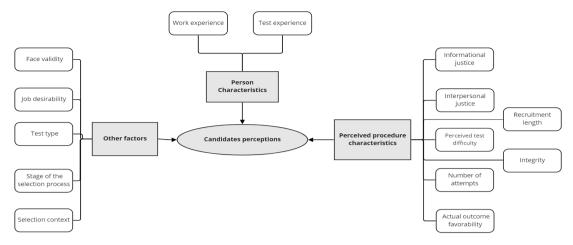


Figure 1: An interpretation and shortened version of model of applicant response to selection

4. Method

According to the recommendation by Bryman (2016), research methods should be aligned to the aim and the research question. For an exploratory study on human perceptions, the choice was a qualitative approach, with data collected from semi-structured interviews. The study was guided by the chosen subset of the theoretical model presented in the previous section. As pointed out by Hausknecht, Day and Thomas (2004), there is a very low correlation between candidates perceptions and factors such as age, gender and ethnicity. Factors regarding candidates' prone performance have been omitted, and the same for some other factors without any potential to answer the research question. Data collection, sampling, data analysis, and ethical considerations are described separately here below.

4.1 Data collection

Semi-structured interviews were chosen for the data collection to enable the idea of giving informants a flexible possibility to express their perceptions as pointed out by Hove and Anda (2005). The semi-structured approach opens up for follow-up questions to go deeper into interesting topics in the informant's answers. Moreover, it is important to create an atmosphere of confidence where the researchers keep an open mind to informant attitudes and formulate questions in a non-threatening and polite manner (Hove & Anda 2005). To fine-tune the initial common question scheme, a pilot interview was conducted early in the research process. A pilot interview is also a good way to rehearse the interview technique, and to check that the environment does not disturb the interviews (Bryman, 2016).

A total of six interviews were conducted and recorded in the video conferencing system Zoom. What could be seen as an advantage with online interviews is that the interviewees can choose an environment where they feel comfortable. To create an atmosphere of confidence, the interviews started with a presentation of the purpose of the study and the interviewees right to withdraw at any time, and without any explanation. All interviews were conducted by two researchers enabling the idea of one researcher taking field notes on interesting topics or reactions. To adapt to the two different informant categories that are presented in the next section, two different question schemes were created.

4.2 Sampling

Six informants were selected in a combination of purposive sampling and snowball sampling. As described by Denscombe (2014), the idea of a purposive sampling is to select informants that have special knowledge and experiences that are relevant for the answering of the research question. Snowball sampling is a frequently used method in qualitative research, where the initially selected informants are asked to recommend personal contacts who fit the sampling criteria (Parker, Scott & Geddes, 2019). For the first informant group the criteria for the purposive sampling were: 1) The informant must recently have been applying for a job, 2) The informant must have carried out a test involving an Al-based recruiting tool, and 3) The informant must have been aware of the fact that an Al-based tool was used,

To get the organisational perspective of Al-based recruiting processes, the first informant group was complemented with a second group of employed recruiters. The selection criteria for the second group were:

1) The informant must be employed as a recruiter, and 2) The informant must have experience from Al-based recruiting tools. The concept of informant triangulation was used by comparing the collected data from these two different informant groups. Informant triangulation, also known as data triangulation, could be defined as to collect data for the same studied process, from different sources, where the chosen sources are different stakeholders who have a central role to play in the investigated process. Besides strengthening the validity by triangulation, recruiters are considered to be the most suitable stakeholder to assess the face validity in recruitment processes, with face validity defined as the relationship between rest results and work performance (Hausknecht, Day & Thomas, 2004).

4.3 Data analysis

Answers from the semi-structured interviews were deductively analysed to find themes and sub-themes with a potential to answer the research question. This was carried out as a thematic analysis following the six-phase process outlined by Braun and Clarke (2006). In the first phase of the process the focus was on getting familiar with the data. This was carried out by transcribing the recorded interviews, and close reading the transcripts. Phase two was the start for the more systematic analysis, with a creation of initial codes that also were discussed between the two authors that conducted the coding. Phase three was conducted with the use of the online collaboration platform Miro (2022). In a platform that could be described as a digital whiteboard with features for notes and mindmaps, the initial codes were grouped into potential themes. According to the idea of a deductive analysis, initial themes were based on the theoretical framework.

The following fourth phase the revision of themes was done in a discussion based on the following questions:

- 1. Is this theme relevant?
- 2. Is the theme coherent?
- 3. Is this a theme or a subtheme?
- 4. What are the boundaries of the theme?
- 5. Are there enough meaningful data to support this theme?

Initially, there were eight potential themes that were reduced to three. This was followed by the fifth phase was about naming and defining the themes, which includes to motivate the themes and if they have a potential to answer the research question. Finally, the sixth phase consisted of writing up the presentation of the final themes: Fairness, Implementation and Predictive validity.

4.4 Ethical considerations

This study has followed the recommendations for ethics in research outlined by the Swedish research council. The two important main principles that guided the study design was 1) *Integrity*, all personal, or other sensible data should be kept as anonymous as possible, 2) *Informed consent*, all informants have the right to know about the aim of the study, and also the right to guit the study at any moment, and without any explanations.

5. Results and analysis

Apart from the themes that were identified in the thematic analysis, there are other variables that can influence the stakeholders' perceptions, mentioned by the theoretical framework. These are work experience, testing experience, test difficulty, job desirability, and whether the candidates have been denied or offered the position. These variables and values for each informant are presented in Table 2.

Table 2: The variables and respective values for each informant

Respon- dent	Work experience	Test experience	Perceived difficulty	Job desirability	Title
А	5 years	Yes	Difficult	Moderate	Denied Company C
В	12 years	No	Difficult	High	Denied

Respon- dent	Work experience	Test experience	Perceived difficulty	Job desirability	Title
					Company B
С	10 years	Yes	Easy	High	Offered Company A
D	7 years	Yes	Difficult	High	Offered Company B
E	Not relevant	Not relevant	Difficult	Not relevant	Recruiter Company D
F	Not relevant	Not relevant	Moderate	Not relevant	Recruiter Company A

With the exception of 'perceived difficulty', these variables did not have an impact on the candidates' perception. Both of the informants who had been denied a position and informant D, who had been offered a position, had similar negative views about Al-based recruitment tools. This finding is not consistent with the model which holds that the actual result can influence the candidates' perception (Hausknecht, Day and Thomas 2004). Hausknecht, Day and Thomas (2004) also state that work experience increases the chance of a positive perception by candidates. Another finding which does not match with the theoretical framework as the majority of informants had a negative attitude towards Al-based recruiting tools despite their work experience varying between 5-12 years.

5.1 Informational justice

The results show that all informants considered it important to have quick feedback after tests and interviews. Recruiter E explains that each candidate is offered a 'feedback interview' where the test results are discussed, regardless of whether the candidate moves on in the recruitment process or not. Recruiter F testifies that their company provides tests from a third-party which are confidential about test results. They conclude that more transparency with the test results is fundamental and being cryptic is unfavourable and disadvantageous.

Communication between candidates and recruiters was a recurring subject. When the candidates felt that they did not receive enough information about the tests, test results or other feedback in the recruitment process, feelings of anxiety, powerlessness or resignation arose, which affects interpersonal justice.

"Yes, so it always felt good after an interview and in conversations, but then after, having done the test and not getting any feedback... It feels really strange."

Candidate A, concerning lack of feedback

Hausknecht, Day and Thomas (2004) explain that if the company conveys an adequate explanation to the candidates about why the methods in the recruitment process are used, as well as having good transparency in their recruitment, it promotes positive perceptions in the candidates.

5.2 Dehumanisation and inclusiveness

Discussions around the lack of human contact was something that the majority of informants brought up during the interviews. It was about the inability that informants believed AI has when it comes to understanding the social aspects in humans. The recruiters and candidates mention that they feel AI today is simply not developed enough to reach the required standards. When informants were asked to choose between an AI-based or traditional recruitment process, the majority chose a traditional one, with the argument that the employer is not mainly interested in who has the best technical knowledge, the most important thing is instead the employee's social ability and capacity for further development. For the recruiters, there was a lack of confidence in the capacity of AI-based tools to find suitable candidates for a position on their own. The informants also expressed concerns that the AI-based recruitment does not take into account the different circumstances people are in. Which can include people with certain disabilities or other life situations such as work or studies that may affect the test results.

5.3 Predictive validity

Predictive validity was one of the biggest factors in candidate perception. According to Hausknecht, Day and Thomas (2004), candidates will perceive recruitment tools more suitable to the extent of their ability to predict job performance. All candidates felt that the Al-based recruitment tools were disadvantageous to them and preferred to be interviewed by a recruiter. This is consistent with the theoretical framework. Informants could not see the connection between the tests they had to perform and the service they applied for. Instead, a test associated with the position they applied for was preferred, for example a programming test for a system developer.

Hausknecht, Day and Thomas (2004) state that interviews and work samples were perceived more favourably than tests when it comes to the estimation of cognitive ability. These approaches were considered more favourable than personality tests and aptitude tests, but also graphology and biodata. All the informants preferred interviews over tests, as they did not understand the association between the test and the position they applied for or did not understand the purpose of the test at all. Both recruiters and candidates expressed scepticism about Al's ability to judge social skills. The ability for logical thinking is important, but other aspects such as social skills are just as important, one recruiter testified and explained that Al cannot assess or appreciate a person in the same way a human can. As a result, these recruitment tools thus degrade reliability.

5.4 Implementation

All informants agreed on the benefits that Al-based recruitment processes could contribute to but expressed that a hybrid solution would be the most successful concept. They believe that Al-based tests used as a decision basis for a human recruiter should be the most optimal solution, assuming it is a well-functioning Al system. From the interviews of the recruiters, it emerged that one of the recruitment tools used was 'useless' and difficult to operate due to faulty design. One of the recruiters explained that human contact is valuable and crucial in the recruitment process, and if Al is going to be part of it, it should be a well evaluated and successful system.

Finally, it is obvious that the majority of informants had some type of negative perception about tests that are completely AI-based. This could be due to various reasons such as the lack of trust in AI's assessment question or dehumanisation in the recruitment process.

6. Discussion

An interesting finding was that, despite the fact that the informants did not want to be part of an Al-based recruitment, they chose to participate. During the 21st century there has been an exponential development that has fundamentally transformed the recruitment process. With the fast development in this area, there will probably be no choice in the future when companies and organisations are investing more into Al-based recruitment techniques. There is an ongoing digitalisation of the recruitment process, with investments in appropriate tools to combate what has been called 'The war for talents' (Laurim et. al., 2021). One of the informants that had applied for many jobs through the years points out that the number of automated tests has increased and that they today are hard to avoid. An interpretation of this could be that candidates have no choice but to apply for positions that have this type of recruitment process. Laurim et al. (2021) study comes to similar results to this study regarding several different aspects. The author states that in general they could not observe a relationship between the individual characteristics of the informants and their perceptions regarding Al in recruitment. All informants had the opinion that Al should solely complement and extend the human capabilities of recruiters. Other relevant factors raised by the author were transparency, testability and a sense of control as key components to developing trust in Al. This also applies to developing trust in relevant stakeholders in the recruitment process, as well as facilitating acceptance and overcoming fear.

Another important aspect that the informants brought up is the dehumanisation of the recruitment process. This could be seen as an inevitable result of digitalisation, where Fritts and Cabrera (2021) brought up the Stakeholder Theory to argue against dehumanisation. They claim that the use of Al-based recruitment algorithms can have a negative impact on the relationship between employers and candidates applying for a job. Moreover, the Stakeholder Theory posits that companies and organisations have responsibilities towards all stakeholders, regardless of whether these commitments will maximise the return on investment or not. That the interviewed candidates felt neglected, resigned and frustrated is a serious objection against automated

recruitment. All, except for one informant in this study, claimed their scepticism towards a recruitment process that is entirely automated, Al-driven and dehumanised.

Regarding implementation, all informants addressed that if AI-based recruitment tools are a necessity, a hybrid solution would be the best option. A traditional recruitment process that has elements of AI, where the artificial intelligence can act as a support for decision-making. Zhang and Yencha (2022) state that users are more likely to accept a service assisted by AI, rather than a service solely controlled by AI. Thus, it can be argued that the recruitment processes of the future should not be completely dehumanized.

7. Conclusion and recommendation

Author's conclusion of this study is that the increasing number of Al-based recruitment tools must be made more transparent and used as decision support and not as a decision maker on its own. The most negative attitude among informants was against the Al-based assessment of social skills. As pointed out by Mitchell (2019), NLP is solved to 90% but that the reamaining 10% can make processes fail with drastic consequences. Another important challenge to address is informational justice, and to make the recruitment process more transparent. The recommendation this study provides is a hybrid process, where Al-based recruitment tools create the basis for human decisions that are more well-informed than in a traditional recruitment process. The purpose was to investigate what perceptions there are regarding Al-based recruitment. One of the biggest factors influencing candidate perception was the recruitment tool's perceived ability to assess candidates' social skills. Due to the current developments in recruitment processes, there should be more research about the ability of Al-based recruitment tools to assess the individual's social skills. Finally, future research should be devoted to developing an updated and adapted model for Al-based recruitment processes, as well as continuing to investigate the fairness of Al-based recruitment tools. The recruitment of the future should not increase time and cost efficiency at the expense of a negative experience for candidates.

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