

Pitfalls and Tensions in Digitalizing Talent Acquisition: An Analysis of HRM Professionals' Considerations Related to Digital Ethics

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Abstract

The practices of organizational talent acquisition are rapidly transforming as a result of the proliferation of information systems that support decision-making, ranging from applicant tracking systems to recruitment chatbots. As part of human resource management (HRM), talent acquisition covers recruitment and team-assembly activities and is allegedly in dire need for digital aid. We analyze the pitfalls and tensions of digitalization in this area through a lens that builds on the interdisciplinary literature related to digital ethics. Using three relevant landmark papers, we analyzed qualitative data from 47 interviews of HRM professionals in Finland, including team-assembly facilitators and recruitment experts. The analysis highlights 14 potential tensions and pitfalls, such as the tension between requesting detailed data versus respecting privacy and the pitfall of unequal treatment across application channels. We identify that the values of autonomy, fairness and utility are often especially at risk of being compromised. We discuss the tendency of the binary considerations related to human and automated decision making, and the reasons for the incompatibility between current digital systems and organizations' needs for talent acquisition.

RESEARCH HIGHLIGHTS:

- Several ethical tensions and pitfalls relate to the ongoing digitalization of talent acquisition.
- We identified upper-level categories of values, such as fairness and autonomy, that relate to the described tensions and pitfalls.
- The described tensions and pitfalls imply new perspectives to consider in the design and development of new information systems to support decision making in talent acquisition.

Keywords: sustainability; digital ethics; collaboration; team assembly; recruitment; talent acquisition

1. INTRODUCTION

This paper focuses on the digitalization of *talent acquisition* (Ployhart *et al.*, 2018; Breauigh, 2021), which represents a high-risk area of decision-making related to an organization acquiring human capital (i.e. employees). In practice, *talent acquisition* is here understood to cover the organizational activities of recruitment and team assembly. Namely, talent acquisition aims to find *the right person for the right job at the right time* (Cappelli and Keller, 2014; Ployhart *et al.*, 2018), and it is the critical first step in effective talent management (Breauigh, 2021). The practices and successfulness of an organization's talent acquisition bear significantly on their productivity, employee well-being and long-term economic competitiveness (Breauigh, 2013; Weller *et al.*, 2019). Recently, the phenomenon called *the Great Reshuffle* (i.e. *the Great Resignation*, a term coined by Anthony Klotz, 2022)—wherein workers change jobs to increase purpose, flexibility, and empathy—can be seen to have highlighted the importance of efficient talent acquisition (Cook, 2021). In regulation, talent acquisition has been recognized as a high-risk area wherein digital systems can significantly impact on future

career prospects and livelihoods (see, e.g., GDPR and the Artificial Intelligence [AI] Act of the European Union).

To these ends, various information systems and digital tools have been actively developed, typically reflecting intentions to improve the efficiency of labor-intensive human resource management (HRM) tasks or to support human decision-making (Albert, 2019; Black and van Esch, 2021). The HRM (Boxall and Purcell, 2022) in organizations is increasingly supported by information technology (IT), covering systems for payroll, productivity, compliance and onboarding measurements, as well as for recruitment and team assembly (Albert, 2019; Fuller *et al.*, 2021). The introduction of digital systems inevitably creates the need to weigh up different goals, values, practical possibilities and tool suitability, often leading to tensions and trade-offs between these. As advanced systems are increasingly introduced in talent acquisition (Statista, 2017; Albert, 2019; Fuller *et al.*, 2021), academics have investigated human resources (HR) professionals' practical experiences of utilizing such tools (Koivunen *et al.*, 2019; Laurim *et al.*, 2021; Li *et al.*, 2021). Nevertheless, research in this area is still underdeveloped and lagging behind industrial

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adoption, particularly in the aspects of digital ethics and the social sustainability of the introduced systems (Raghavan *et al.*, 2020; Sánchez-Monedero *et al.*, 2020). In fact, we are witnessing a mushrooming of literature on the detrimental societal and cultural effects of digitalization at the general level, highlighting issues related to unfairness and discrimination (Eubanks, 2018), data ethics and privacy in the surveillance economy (Zuboff, 2019) and considerations about AI ethics, including those related to accountability, transparency, and human control (Fjeld *et al.*, 2020). Together, such viewpoints form an interdisciplinary area of research often termed *digital ethics* (or *IT ethics*) (Moor, 2006). These developments introduce an intriguing research gap that demands interdisciplinary, sociotechnical analysis of the ongoing digitalization of talent acquisition. The general principles and viewpoints in such literature call for critical analysis of the more specific challenges and pitfalls encountered in the digitalization of specific areas.

Using a 3-fold framework, we conducted a secondary analysis of 47 interviews that we carried out within a 3-year period with HRM professionals. The interviews focused on activities related to recruitment and assembling creative teams, uncovering the HRM professionals' practices and challenges in relation to digital systems, as well as their expectations regarding next-generation digital systems. To develop our novel analytical framework, we identified three landmark papers that offer intertwining and complementary perspectives on digital ethics in talent acquisition. Together they enabled us (i) to identify relevant ethical values, tensions between those values and general pitfalls encountered in the digitalization of talent acquisition; and (ii) to analyze how the interviewees understood and responded to the identified issues. First, Royakkers *et al.* (2018) posited that the emerging forms of technology have put pressure on public values, such as human dignity, the balance of power, privacy and autonomy. Highlighting areas of ethical concern in digital transformation, the article provided us with evaluative lenses (i.e. *values*) through which the interview material could be analyzed. Second, Whittlestone *et al.* (2019) called for focusing on the tensions that arise when ethical principles for AI are interpreted and applied in practical contexts. This article guided us toward identifying *tensions* and *trade-offs* that emerged within the interviewees' situated practical realities—for example, due to business needs, pressures, and technical constraints—thereby allowing us to better contextualize the research material. Third, Selbst *et al.* (2019) described 'abstraction traps' that can undermine or misguide the pursuit of public values, such as fairness, in dynamic sociotechnical contexts. Keeping these traps in mind, we were able to highlight common tendencies pertaining to the interviewees' ethical reasoning.

In sum, the three articles thus provided us with a conceptual framework applicable for analyzing both (i) what public values are at stake and (ii) how the pursuit of these values might be successful or unsuccessful in the context of digital talent acquisition. To these ends, we ask: *What kind of pitfalls and tensions relate to the development and use of IT in HRM experts' decision-making?* This explorative paper contributes practically relevant considerations for designing and developing ethical IT to support talent acquisition. Digital ethics and particularly fairness and autonomy have received increasing attention in HCI (Holstein *et al.*, 2019; Mulligan *et al.*, 2019). We further describe what public values HRM experts perceived as central in digital talent acquisition and why they considered this to be the case and which stakeholders are affected by the identified value conflicts and pitfalls. Overall, our work contributes to designing ethically aware talent acquisition

activities for complex sociotechnical systems and presents new avenues for research in this area. Being able to develop such ethically aware guidelines is an important topic for HCI, and research to this end has been called for in the *IwC* journal also (Abascal and Nicolle, 2005).

2. THEORETICAL BACKGROUND AND RELATED WORK

2.1. Talent acquisition as an application area of IT

We focus on market-based talent acquisition where interested *candidates* are invited to apply (typically from outside an organization); if they apply, they are regarded as *applicants* (Keller, 2018). Organizations typically rely on external human capital (i.e. new talent) when seeking to build new competences (Cappelli, 2010; Cappelli and Keller, 2014), motivated by the facts that employee tenure is declining and that employment stability has decreased both in the private and the public sectors (Hollister, 2011). These trends result in increasing numbers of talent acquisition decisions and, hence, also increase the offering of new digital systems. Overall, scholars advocate for having systematic practices for talent acquisition (Collings and Mellahi, 2009). However, it seems that organizations' and decision-makers' motives are often less rational than is commonly assumed or desired (Rivera, 2012, 2020). For example, human decision-making can be influenced by greed, overconfidence, prejudice or fatigue (Kausel *et al.*, 2016; Lepri *et al.*, 2018).

While 'talent' is sometimes considered as a rarity, in reference to high-potential workers (Lumme-Tuomala, 2019), research shows that a more inclusive approach includes, for example, inconsequential forms of work (Breugh, 2021). Talent acquisition offers a strategic perspective on activities that are not limited to external recruitment (Breugh, 2021). Therefore, our analysis includes team assembly, which refers to 'the process of searching for, identifying and choosing members for a team' (Gómez-Zarzá *et al.*, 2020). After all, work teams are ingrained in organizations (Salas *et al.*, 2017), and organizations' success is increasingly dependent on teamwork (Hall *et al.*, 2018; Salas *et al.*, 2018; Tebes and Thai, 2018). While much of the existing research on teams tend to focus on relatively intact teams and generally what makes teams effective after they are assembled (Bell *et al.*, 2018), the interviews in this study cover particularly the assembly phase of diverse innovation teams that span organizational boundaries explicitly before the teamwork processes begin (Edmondson and Harvey, 2018; Fecher *et al.*, 2020).

The talent acquisition process tends to follow a linear decision-making process with multiple stages, including (i) establishing requirements, (ii) identifying and attracting alternatives, (iii) comparing alternatives and (iv) selecting the most suitable match (Holm and Haahr, 2019; Koivunen *et al.*, 2019). Practical tasks throughout the stages include, for example, writing job advertisements, deciding on the channels for attracting candidates or proactively searching for candidates, and comparing applications (Holm and Haahr, 2019; Koivunen *et al.*, 2019). Later in this paper, we utilize this four-stage framework to structure the findings and to highlight the strategic decisions at different stages, such as *bringing a job opening to the attention of potential job candidates* and *encouraging a candidate to apply for a job opening* (Breugh, 2021).

Typically, the idea behind digitalizing and automating such labor-intensive tasks is to reduce costs and save time by reducing administrative work, increasing processing speed, and enhancing

decision making (Parry and Tyson, 2011; Suen et al., 2019). To this end, organizations conventionally utilize e-recruitment technologies (like websites, social media and job portals) to attract or to find applicants ('sourcing'). for example, Microsoft's LinkedIn. Further, applicant tracking systems (ATS) are used to manage the workflows and tasks, such as reviewing applications ('screening') and communicating with the applicants.

Systems based on AI are increasingly utilized through, for example, robotic process automation, chatbots and predictive technology (Albert, 2019; Black and van Esch, 2021). Most common use cases include searching for candidates on online networking sites, such as LinkedIn or Indeed Resume. Furthermore, according to market research, numerous vendors develop AI systems to find, filter and assess applicants (Statista, 2017; Bersin, 2021; IndustryARC, 2021). One potential purpose of AI is to identify and mitigate patterns of bias and discrimination in the decision-making process (Raghavan et al., 2020; Sánchez-Monedero et al., 2020; Wilson et al., 2021). However, in studies where participants have been asked to choose between an algorithmic or human decision, there is growing evidence that algorithmic decisions are perceived as less fair and perceived to evoke more negative emotion and skepticism (Lee, 2018; Kaibel et al., 2019). In addition, Wilson et al. (2021) reminded us that, while discrimination that is driven by human biases is a long-standing and widespread issue in talent acquisition, we should not assume that algorithms aiming to remove biases are neutral or bias free. Tambe et al. (2019) summarized in their study that AI faces challenges in the HRM context because of the complexity of the HR phenomena, constraints regarding small data sets, fairness and other ethical and legal constraints, and possible adverse employee reactions to algorithm decisions.

Literature is increasingly investigating the use of IT in talent acquisition. The applicant perspective was very recently introduced in IwC (Dillahunst et al., 2021) with the existing research generally tending to focus on that perspective (McCarthy et al., 2017). By contrast, the research on HR professionals' perspective seems to be scarce with a few notable exceptions. For example, Li et al. (2021) interviewed 15 HR professionals who used AI-enabled software for sourcing or assessments. They found that socio-organizational contexts, including professionals' individual motivation and organizational practices, shape how AI systems are used. They provide suggestions for how sourcing and assessment systems could be more equitable by reconsidering the HR professionals' role versus technology's role in assessment. In addition, van den Broek et al. (2019), van den Broek et al. (2021) conducted a rigorous ethnographic field study wherein they collected data from both machine learning (ML) developers (who develop software based on ML algorithms that utilize training data to make predictions) and the HR professionals using the developed ML service. In the first paper, the authors empirically illustrated how fairness ideals can fail to account for the contextual, temporal and contestable nature of fairness (i.e. the formalism trap; Selbst et al., 2019), and highlighting the crucial role of ethical values in the use and development of digital solutions (van den Broek et al., 2019). In the second paper, the authors described the hybrid practice that formed through mutual learning between ML developers and domain experts (van den Broek et al., 2021). All in all, empirical research on the HR experts' perspectives seems to be gaining HCI scholars' attention as the community develops an understanding of the problematic aspects of IT in terms of decision-making transparency, accountability, and the societal impact of digitally mediated HR processes.

2.2. Developing an analytical framework for ethical considerations in talent acquisition systems

The ethical and social sustainability of various information systems have been extensively discussed over the past decade across research communities. In what follows, rather than outlining this vast and multidisciplinary area of literature, we focus on the central question of how digitalization comes to be at odds with public values and individual rights (such as the rights of privacy, human autonomy and fairness; Royakkers et al., 2018) specifically in the context of talent acquisition. We present the conceptual framework that we used in the analysis, building on the above-mentioned three articles on the ethical considerations of IT that we deemed particularly relevant and complementary.

As the talent acquisition process conditions applicants' opportunities and may have repercussions for both companies and applicants, digital ethics offer a crucial analytical lens. Not only do employers' choices influence social inequalities by contributing to employment disparities (and thus play an important role in individuals' economic chances; Rivera, 2020), but also do companies' reputations, in terms of ethicality plausibly, affect their attractiveness from the perspective of candidates and applicants. A common expectation is that digital systems can help in devising fairer, less biased processes. For example, systems might increase procedural justice through structured approaches and standardized definitions, as well as decrease the likelihood of making political decisions (Dries, 2013). However, the legal and ethical risks in talent acquisition are intricate and perhaps increasingly more so due to digitalization. This underlines the need for a sociotechnical perspective that is seemingly missing in the initial wave of guidelines and codes of conduct that aim to set ethical boundaries for the development and use of emerging technologies (Jobin et al., 2019). A dire need for more practical approaches to digital ethics that suit practitioners' contextual needs persists (Holstein et al., 2019; Selbst et al., 2019; van den Broek et al., 2019; Whittlestone et al., 2019).

Our conceptual frame synthesizes the insights from three papers related to digital ethics (Royakkers et al., 2018; Selbst et al., 2019; Whittlestone et al., 2019). The different viewpoints are expected to help identify critical perspectives through our analysis process. We particularly chose these papers due to the insights they offer for research on ethics in sociotechnical systems: They emphasize the plurality of the values and interests at play in digitalization and datafication, the contextual tensions that arise and the complexity of interactions between social and technical systems. This 3-fold frame enables us to analyze HRM professionals' situated perspectives while maintaining the critical distance necessary for identifying pitfalls and tensions in regard to how their perspectives address public and societal values and concerns.

The first paper contributing to the framework, by Royakkers et al. (2018), identifies privacy, security, human autonomy, human dignity, the balance of power and justice as areas of ethical concern in digitalization and digital transformation. The paper also discusses specific concerns related to filtering and categorization (including questions regarding power in terms of who gets to define the standards for filtering and categorization), servitization, unfair competition and monopolization. In the analysis of the research data, we located connections between participants' comments, both specific and broad, and the themes introduced by this article; we also sought to identify how the participants position themselves as agents in relation to the normative requirements posed by different ethical values.

Second, noting that values and ethical principles lend themselves to contested interpretations of the concrete requirements they impose on agents, Whittlestone et al. (2019) argued that a focus on tensions between values should be taken as the starting point. There is a need to understand the stakeholders' goals and (interpretations of) values, the constraints that practitioners face in reasoning, and trade-offs that arise given those goals and constraints. Fairness, for example, is a contextual and highly contested concept (Holstein et al., 2019; Lee et al., 2019; Whittlestone et al., 2019), and domain-specific resources, metrics, processes and tools are in demand by practitioners for navigating challenges related to fairness that are unique to their domains (Lee et al., 2019; Whittlestone et al., 2019). Existing interview studies show that ML practitioners need cheap and effective strategies for addressing fairness issues and for helping in anticipating trade-offs between fairness (and other) desiderata for ML systems (Veale et al., 2018; Holstein et al., 2019). The focus on tensions helps to highlight ambiguities and gaps in agents' understanding of how the use of technology is impacting on society in ethically relevant ways and to contextualize their needs regarding the pursuit of ethical sustainability.

Third, the focus on interpretative flexibility and practical challenges is also emphasized by Selbst et al. (2019). Taking a sociotechnical lens to ethical design, the authors present five 'abstraction traps' into which agents may fall when designing, implementing or evaluating technological solutions. They argue that *over-abstraction*—here, a failure to model the social context into which sociotechnical systems are deployed and how that context interacts with the implemented technology, producing ripple effects—can misguide design and lead to harmful outcomes. *Solutionism* can obscure the fact that technology cannot always provide the best solutions to business problems or social issues. Solutionism is especially a paramount issue as AI software is designed for smooth *portability* across contexts, even though decision makers and affected individuals can in fact have differently situated needs and interests. We analyzed the interview data through these notions of over-abstraction, solutionism and portability aspirations. We aimed to identify the levels of abstraction in which HRM professionals operate when considering the digitalization of talent acquisition and whether non-technological factors and social implications figured into their considerations (and, if so, to what extent they did so).

On a conceptual note, we specifically use the term *pitfall* to describe how HRM professionals might fail to account for ethically meaningful factors due to, for example, an excessive focus on other factors (e.g. business needs) or because of practical constraints (e.g. a lack of relevant information). The term *tension* is used to describe situations where the ethical and practical requirements faced by HRM professionals come into conflict. These include *genuine trade-offs*, where there are necessarily conflicting ethical duties; *practical trade-offs*, where conflicts between duties arise due to contingent, practical circumstances; and *false dilemmas*, where agents fail to recognize available options that would resolve tensions (Whittlestone et al., 2019). This distinction does not imply that practical trade-offs are less 'genuine' in terms of their concrete consequences for ethical decision making. Rather, the distinction serves to highlight that practical circumstances may necessitate trading off desirable aspects in talent acquisition, even if those aspects are compatible in theory.

Together, this conceptual frame allowed us to draw conclusions about what HRM professionals need in digital talent acquisition, what factors were accounted for, how these factors were

accounted for and what kinds of critical tensions, trade-offs and pitfalls occurred.

3. METHODS

The present study is a secondary analysis (Heaton, 2008; Ruggiano and Perry, 2019) based on empirical, qualitative data from three qualitative interview studies conducted by the authors. Before this study, each of the studies has resulted in a published research paper in HCI and CSCW outlets (Koivunen et al., 2019, 2021, 2022). Altogether 47 interviews were conducted (21 + 13 + 13). All the interviews were semi-structured by nature, and afterwards, they were transcribed word for word using a professional service or by one of the authors. The large majority of the interviews were conducted face-to-face as the studies took place before the COVID-19 pandemic. Almost all the face-to-face interviews were conducted at the participant's workplace.

In all interviews, we inquired about the HRM professionals' practices and the perceived challenges in relation to digital systems in talent acquisition activities, and we typically asked them to give concrete examples. In the first study, we interviewed HR specialists and headhunters, inquiring about their practices and focusing particularly on various challenges and risks they perceive in the recruitment context (Koivunen et al., 2019). In the second study, we interviewed people who regularly assemble innovation teams, inquiring about their practices, for example, in relation to how they obtain and process information received from applicants and on what basis they match people to teams (Koivunen et al., 2021). In the third study, we inquired about recruiters' early experiences and expectations regarding a specific, emerging form of e-recruitment technology: recruitment chatbots (henceforth, *recruitment bots*) (Koivunen et al., 2022).

As this paper utilizes the secondary analysis method, it is necessary to address methodological rigor. In the following, we provide our reflection that is particularly based on the findings and the recommendations by Ruggiano and Perry (2019) who studied the topic. The findings reported in the earlier papers have not been utilized in the analysis and are not republished here. To ensure the rigor of our secondary analysis of the qualitative data we (i) utilized uncoded, clean transcripts from the parent studies that, importantly, provided settings that met the requirements of the present study (Sherif, 2018); (ii) applied a novel analytic approach where we purposefully read the transcripts from a new perspective; (iii) included new researchers with relevant expertise considering the new perspective; and (iv) used a constructivist-grounded theory-oriented approach that helped us to be critical and reflective when coding the data. Notably, constructivist grounded theory approach has been utilized in secondary analysis (Whiteside et al., 2012).

This paper significantly differs from the parent studies in two respects. First, whereas the parent studies concerned concrete practices, and user expectations and experiences in digital talent acquisition, here we center on digital ethics as a novel perspective and set of challenges in that context. Second, we take a more abstract approach to the discussion of recruitment and team assembly by considering both as forms of talent acquisition.

3.1. Participants and their recruitment

As all three studies were conducted in Finland, this research focuses on the Finnish cultural environment, which is also the most familiar cultural environment to the authors. In terms of professional life, Finnish culture is typically considered a Nordic culture with democratic decision-making practices, high worker

autonomy and work ethics, and an advanced level of digitalization throughout society.

The participants were invited to participate either by identifying relevant candidates from both public and private organizations in Finland and then contacting them directly or with the help of snowball sampling and LinkedIn advertising. The participants' professional roles are presented in Table 1. The way the participants reported their professional role varied slightly between the parent studies, consequently there are more details about some participants than others. One participant was interviewed twice in separate studies; therefore, the total number of interviews was 47. To summarize, the participants represent a variety of job roles, including HR managers, HR consultants, HR department leaders, HR software development managers, team coaches, facilitators of innovation teams and CEOs of companies that develop relevant digital tools. Almost all the participants were working in the knowledge work industry. All of them had a strong professional track record in either talent acquisition or the development of systems for talent acquisition. A diverse range of work roles was considered crucial in order to develop a rich qualitative account of this space. While HR professionals have gained much attention in talent acquisition literature, e-HRM studies have shown that digitalization has also transferred to line managers (Myllymäki, 2021). In the Results section, we refer to the participants collectively as *HRM experts*.

3.2. Data analysis

The 47 interviews were reanalyzed following a bottom-up analysis procedure; however, we used the presented conceptual framework as an interpretative lens. We used constructivist-grounded theory-oriented analysis (as described by Charmaz and Bryant; Bryant, 2017; Bryant and Charmaz, 2019) while being mindful of the framework throughout the process. The average length of the interviews per study was 73, 74 and 59 minutes, resulting in 335,378 words of transcribed text. Before initiating the analysis, two of the authors had several discussions in order to identify a suitably complementary viewpoint and scope for the secondary analysis.

The first author conducted the initial descriptive coding that produced 836 codes. This was followed by discussions with another author familiar with the framework who commented on the individual codes. To ensure that a focus on aspects of digital ethics was maintained, two authors checked all the codes with respect to their relevance and added interpretations as annotations. This process of selecting the codes with most analytical power and relevance resulted in a narrower set of 382 codes, which was then utilized in the following analysis process. At this point, a decision-making process with four stages (Koivunen et al., 2019) was found to be a useful framework with which to organize the findings. We categorized the codes according to the stages and initiated focused coding where the abstraction level was raised and codes were synthesized. Further, we highlighted interesting codes or code groups relevant to highlighting tensions or pitfalls.

Because the analysis produced more tensions and pitfalls than could be practically reported in one article, three of the authors refined them and narrowed down the list to the most interesting ones. The analysis was conducted in Finnish, and the quotes presented in the Results section have been translated by the authors. We deliberately avoid quantifying the findings as concepts have relevance in virtue of what they bring to the framework qualitatively, regardless of how frequently they may have appeared quantitatively (Bryant and Charmaz, 2019).

4. RESULTS AND REFLECTIONS

We report our findings through an analytical narrative that attempts to offer a contextually rich description, supported by user quotes at places. Related to each temporal stage in talent acquisition (Koivunen et al., 2019), we structure the findings according to the identified tensions and pitfalls and we describe them in the light of the interview data and potential design considerations for future development of digital HRM tools.

4.1. Establishing requirements

This stage relates to the identification of the kinds of qualities that are sought, as well as to specification of the application process and the most suitable tools to support it.

4.1.1. Tension: Short- vs. long-term planning

New tools constantly flood into the market with promises to streamline the talent acquisition process (Cappelli, 2019). Spending on the latest tools and expertise on using them can be a major investment for an organization. The interviewees rightly reminded that new tools also introduce new tasks and demand skills to learn in order to utilize the benefits. For example, when a new recruitment bot is deployed, the HRM experts need to learn how to write chatbot scripts. Furthermore, the systems tend to require configuration work; they might not be updated regularly and, in general, they can be short-lived. One participant told that their organization had started to develop a system to collect application information and to make suggestions on who could work together. However, as demonstrated in the quote below, they emphasized that creating such functionality has proven to be challenging, and the system still requires a lot of development in order to create value. In other words, fulfilling what was envisioned to be the tool's expected potential seemed challenging.

'It requires honing to make it work perfectly or even just enough to get it work properly. At the moment, it is maybe more like a databank for us and, in practice, a lot is done by our own personnel.' (Study 1, ID in the participant table: 16. Project manager, discussing the development of their system).

As Royakkers et al. (2018) point out, IT service providers are increasingly using the software-as-a-service pricing model, meaning that they are always-active services with continuous expenses. However, needs for talent acquisition are irregular and tend to accumulate according to the economic situation. Moreover, in the labor market, there can be many suitable applicants available at one moment, while none at another. Organizations therefore need to consider whether to conduct the process internally and invest in new systems and the required expertise to use them or to outsource talent acquisition to external service providers.

In sum, the interviews implied that there is a risk that companies lean on reactive short-term thinking and quick technological fixes, rather than improving their decision-making processes, which reflects techno-optimistic and tool-centric solutionism trap, as described by Selbst et al. (2019). The first stage of creating requirements greatly impacts the following stages (Koivunen et al., 2019; Breaugh, 2021), hinting that a better approach is to increase the time spent in carefully designing the job advertisements and considering strategic actions of talent acquisition such as what competences would be truly beneficial.

4.1.2. Tension: Abstract vs. detailed job descriptions

The established requirements for talent need to be clearly reflected by the job description shown to candidates. However, throughout the process of creating the description, the

TABLE 1. Professional roles of the participants, listed in the order they appear in the parent publications

ID	Professional Role
1	Startup CEO, developing recruiting apps
2	Startup CEO, developing recruiting apps
3	Startup CEO, analyzing social media
4	Organizer of a student job fair
5	HR consultant, a job fair organizer
6	Project manager, event organizer
7	Strategic resourcing and recruiting expert
8	Head of recruitment and employer branding
9	HR manager
10	Recruitment consultant
11	HR consultant
12	Recruitment team leader
13	Sales and recruitment team leader
14	Journalist, team leader (responsible of hiring team members)
15	Director of digital environment. Used to assemble teams for higher education innovation projects
16	Project manager in a mentoring program
17	Account manager, consultant
18	People development consultant
19	User experience team leader
20	Community manager, career counseling
21	Social media recruitment trainer
22	CEO of a company developing an application that matches people into teams within an organization
23	Innovation platform facilitator who assembles teams for higher education innovation projects
24	Creative director. Responsible of the development of project teams, involved in team assembly for higher education innovation projects
25	Coach of team leaders and managers
26	Innovation platform facilitator who assembles teams for higher education innovation projects
27	Vice president. Formerly a matchmaker in a company that organizes innovation projects for higher education students
28	Team coach. Coordinates innovation projects for higher education, also covering team assembly
29	Involved in team assembly of multiorganizational innovation teams that focus on societal challenges
30	Team coach. Mainly guides innovation teams but also has assembled teams in the context of higher education
31	Designer. Assembles and coaches higher education student teams
32	Assembles and mentors higher education teams that, e.g., aim to organize an annual innovation event
33	Facilitator who assembles teams for higher education innovation projects
34	Recruitment manager in construction sector who has tested a live recruitment chat, and is planning to deploy a chatbot in their current company
35	HR manager. In charge of recruitment in a company that provides billing and financial management services. Is actively using a chatbot to reach customer service and knowledge work professionals
36	Head of HR department. Worked in a company that provides IT services. Has tested various chatbots to automate HR activities
37	Head of HR digitalization and AI project in a multinational company of ~100 000 employees. Has deployed an internal chatbot for HR
38	HR software development manager in an employment agency that helps to recruit 6000–8000 people annually. Has deployed a customer service chatbot for job seekers
39	CEO in a company that develops chatbots for several clients. Also uses a chatbot to hire new people to their company
40	HR manager in restaurant business. Oversees the recruitment process. Has experimented a chatbot for recruitment.
41	Product manager and HR/recruitment specialist for a public sector job board. Has tested AI-powered chatbots to match job seekers and job openings
42	Director of a recruitment department. Their company offers chatbot solutions to companies that are placing job ads to their job board.
43	Chief marketing officer and co-owner in a company that develops recruitment software. The company is developing a chatbot that matches information provided by candidates to job ads
44	Responsible for communication and recruitment marketing in an employment agency that specializes in construction workers. Oversees the use of chatbots by, for example, creating chatbot scripts
45	Project manager. Manages a network of people in a company that promotes a better working life for the youth. The company has recently received offers from chatbot vendors but has not yet deployed a chatbot
46	Head of a production unit in a confectionery. Decides what kind of talent is needed. Interested in testing recruitment chatbots in the near future

requirements tend to become more abstract for the sake of keeping the job advertisement text relatively short and attractive. In other words, a tension between abstraction and detail emerges. Organizations increasingly compete for attention on online job boards (e.g. Indeed) or in social media (e.g. LinkedIn) where a well-designed job advertisement can overshadow others, while also noting that targeted advertisements on these online websites certainly influence what job opportunities are visible to the

candidates. Many participants underlined that, in practice, attracting relevant applicants often means balancing between abstract descriptions with loose requirements and detailed descriptions with more restrictive specifications. In addition, both our interviewees and recent industry reports (Deloitte., 2021; LinkedIn, 2022) highlight the need to focus on the perks, cultural match and additional benefits of the position to make the description stand out in a positive light.

If the job description text is optimized for search engines, the texts tend to be further simplified and generalized, which can result in many non-ideal applicants. Conversely, more detailed and tailored advertisements can increase the accuracy of the process, possibly with the cost of excluding certain (groups of) candidates. Prior research has underlined that communicating the requirements realistically has numerous benefits, including reduced turnover rate of new hires (Baur et al., 2014), even when doing so practically reduces the number of applications. Conveying realistic picture in the acquisition process is also considered to be an 'ethical imperative' for the HRM experts (Buckley et al., 1997). Echoing findings of emergent trade-offs between accuracy and fairness targets (Whittlestone et al., 2019), this suggests group fairness and recommendation relevance can be in conflict, for example, when learning algorithms are used for generating recommendation lists for headhunters. The interviewees emphasized that considerations in these respects need to be especially thorough when the specified applicant attributes might be discriminatory (e.g. language requirements).

All in all, we identified this tension as a form of challenging choices at the level of external communications, which could be better supported by IT systems. An interesting AI tool to this end is Textio¹, which argues to help optimizing job descriptions in terms of applicant reach and checking that the language is, for example, gender neutral (Yarger et al., 2019). According to market reports, another seemingly promising approach is to include video content that feature a recruiter (VideoMyJob, 2021). This may again increase complexity in terms of work tasks for HRM experts but also introduce possibilities to better reach candidates who prefer visual rather than textual job descriptions.

4.1.3. Tension: Ease and speed of applying vs. detailed information

The interviewees presumed that many candidates would not read long, textual job descriptions because they are considered boring, or because they lack the time, tools or skills to complete a full-scale application. Hence, emerging digital systems attempting to lower the threshold to apply tend to be proactive and clearly guide the applicant through the process, and they do not require attachments, such as external CVs. In fact, many participants believed that oftentimes the candidates wish to be able to quickly scan through new opportunities without initiating any kind of process or going through the questions one by one, which is, for example, the default in recruitment bots. Based on the data many of our interviewees' organizations had collected, it was evident that initial questions that appear troublesome, irrelevant or too personal can cause the applicant to flee, hence further motivating to use low-threshold application channels.

'It has been widely discussed that we should be able to contact a person interested to work for us as fast as possible, because otherwise they have already run to the next employer.' (Study 3, ID:44, responsible for communication and recruitment marketing in an employment agency that specializes in construction workers).

In a speedy process, the initial applications tend to be highly structured and simplified, addressing relatively few core questions. This can improve the consistency and comparability of the applications, helping the recruiter to quickly scan through the applications and identify key differences. However, simplicity also means that individual applicants lack the opportunity to present themselves in detail, hence making it harder for them to stand out. Moreover, a recruiter or team leader might end up with many

similar applications, rendering a well-informed and fair choice nearly impossible.

A speedy process can be particularly alienating to experienced applicants, especially in knowledge work sectors where the decision makers often appreciate an application with personal style and the merits of the candidates are expected to weight in the choice. Compared to experienced candidates, it seems that inexperienced candidates are typically less influenced by the issue-relevant content of a job advertisement (Walker et al., 2008). Therefore, utilizing large digital job boards and application channels that support conveying relatively simple messages (e.g. recruitment bots) seems to make sense especially for entry-level positions where broad attractiveness and, hence, large numbers of applicants is desirable. Here, a playful approach can work, while in the case of seeking to fill a specialist position, there are likely expectations of following a standard format with a considerable level of detail.

Overall, this tension between speed and ease, on the one hand, and detail and accuracy, on the other, introduces a need for additional support in selecting the most suitable strategy for applicant attraction: does the organization want to opportunistically explore the alternatives on the market by lowering the threshold or, do they prefer a predefined and relatively inflexible application process with a narrower focus?

4.1.4. Tension: Uncertainty vs. inclusion

While gathering and specifying requirements for a talent acquisition case, digital systems could support the involvement of different stakeholders, such as senior executives, hiring managers, team members, project clients and different HRM experts. Several participants generally agreed with the benefits of an inclusive process, mentioning, for example, cases of involving other team members in the decision-making. Certainly, a democratic approach could decrease uncertainty in requirement specification. However, the participants shared their concerns that having high number of voices can delay the process, increase complexity in terms of coordination, require compromising when there is a variety of opinions, and demand more time altogether—which is typical in democratic governance. In an inclusive process, finding a common ground and shared principles can be challenging, as different people join with various levels of understanding regarding, for example, project details, what the relevant substance skills are and how to best describe them. Furthermore, they can have different views on what kind of approach to utilize regarding application channels and application analysis, as highlighted in the quote below.

'The teams are by no means homogeneous, nor are the projects. They vary very much in their level of abstraction and technical requirements. This means that if we have a highly technical project that is not necessarily abstract, then at that point someone (of the stakeholders) may not understand at all what it is all about' (Study 1, ID:15. Director of digital development, discussing how much variation innovation teams have).

Several HRM experts mentioned that their software for talent acquisition includes mechanisms for reaching agreement, for example, by enabling discussion and editing of job descriptions among relevant stakeholders within the organization. From an ethical perspective, software features that support this kind of inclusion promote transparency and equalization of power among stakeholders. However, HRM experts' discretion with respect to specifying talent acquisition requirements could be diminished, thus affecting their perceived autonomy. Moreover, issues related

¹ <https://textio.com/>

to fairness in this process may become salient in case stakeholders have different expectations about the extent to which they ought to be able to influence those specifications.

In sum, ideally the tools spark and enhance data-based discussion among stakeholders regarding the job requirements, the potential applicant profiles, and combinations of people or teams that would help the organization to consider broader positive impacts than filling an emerging need.

4.2. Identifying and attracting alternatives

This stage covers the identification of potential applicants who would meet the requirements as well as the selection of the means of attracting their attention and encouraging them to apply.

4.2.1. Tension: Requesting detailed data vs. respecting privacy

Complex tensions concerning business needs and utility, privacy, transparency, and fairness are particularly salient in this context (Whittlestone et al., 2019). HRM experts request and can gain access to applicants' private personal information in order to make well-informed decisions. Therefore, they need to balance between persuading applicants to share relevant work-related information and avoiding issues with privacy and confidentiality—especially concerning information that should not influence the talent acquisition decisions. Participants discussed that CVs often have very little or no relevance to the applied position, but they nevertheless tend to reveal information related to protected attributes, such as race, gender or age. A participant developing a recruitment application emphasized that they intend to respect applicants' privacy by avoiding gathering extra information and supporting user control:

'In a way the trust is based on the fact that the user controls all the data they enter at all times. They can delete their information and account at any time. They control whether they want to meet someone. No intermediaries, we are not in between, but the user is directly in contact with the company [...] if the applicant has such a feeling that when he has decided to give these things there, he can feel that they are used with respect.' (Study 1, ID:1. Startup CEO developing recruiting apps, discussing what creates trust to the vendor's brand).

An interviewee working on a public sector job board said that applicants are increasingly creating anonymous profiles in their website for employers to find, demonstrating a way to reduce discrimination. While initial research evidence shows that such anonymization can prevent discrimination in the early stages, there is a risk that it only postpones discrimination to later stages, or that the prejudices of other unmasked cues are enhanced (Rinne, 2018). Moreover, Foley and Williamson (2018) interviewed managers in Australia and found that even when applicants' names and identities are anonymized, managers use implicit signals and cues to infer the gender identity. This calls for piloting anonymization before large-scale use and consideration that the discrimination might move into another stage and that other cues might be weighed differently.

Transparency, candidates' privacy, and control over data and interactions with the recruiter were considered desirable from an ethical perspective. This echoes the notion that privacy, transparency, and meaningful control are essential for human autonomy in sociotechnical contexts (Laitinen and Sahlgren, 2021).

4.2.2. Tension: Candidates' data rights vs. tracking their interactions

Closely related to respecting privacy of the application data, the participants also considered whether it is acceptable that candidates' behavior is tracked implicitly. Having an interactive application channel (e.g. chatbots) creates an opportunity to collect data on the applicants' micro actions *en masse* and to optimize the application experience accordingly. For example, it could be analyzed how long it takes to answer certain questions or where an applicant might leave the application form or cease interaction with a chatbot.

Targeted job descriptions (e.g. in the form of advertisements) based on the user's browsing history have emerged (e.g. on LinkedIn; Kenthapadi et al., 2017) as an attempt to grab the attention of seemingly relevant individuals. A participant who was working on a job board within a large media group speculated that it would be possible to analyze what kind of news the applicant reads and, based on the information, to recommend a suitable job description. Another participant explained how LinkedIn data can be connected to other services that, for example, track how much time potential applicants spend on other websites. If the applicant is aware of how the browsing behavior affects, for example, what kind of positions are recommended, it is possible that they appreciate relevant recommendations, and even customize their behavior or the settings of the tool.

At the same time, one participant reminded that a digital footprint on the platforms can be deceiving and typically tell little about the availability of the person. The seemingly most qualified and active individuals might look like good candidates, but the recognized activity might be part of their current job, or they might simply lack the interest to apply.

Together with the previous section, this introduces a classical challenge of data ethics concerning if and how the tracking activities can be justified through the logic of utilitarian consequentialism (i.e. the ends of recommending an interesting opening justifying the means of gathering data about them). While this is a common challenge in recommender systems in general, the context of talent acquisition can demand very detailed data gathering and user modeling for the system to be able to recommend anything meaningful. Further, while the benefit to an applicant is conditional, the hiring organization might benefit in any case by gaining insights about the job market and useful information about their application process.

4.2.3. Pitfall: Unequal treatment of applicants across application channels

While the interviewees agreed that different application channels are necessary to reach different audiences, the value of treating all applicants equally regardless of the used channel was evident as well. However, in practice, it seems that applicants applying via certain channels can get an unfair advantage when the channels result in different forms of applications. For example, the channels can vary regarding the maximum length of the answers, in which case the UI can imply or encourage to send short or long answers. They can also involve different numbers of questions and requests for external documents. Compared to a web form or an open application, a recruitment bot application contains significantly less information, and can include predefined answer options rather than open fields. Furthermore, the language support can vary in application channels and, thus, direct some applicants to use suboptimal channels.

While introducing a low-threshold and easy-to-access channel can increase equality in terms of reaching busy applicants or those who do not have the ability or skills to prepare detailed external documents, it can also favor those that are good at expressing themselves in a concise manner. The participants figured that specialists might find it easier to talk about specific themes and competences rather than answering questions on their personality or values, while more generalist type of applicants can give a positive impression by giving abstract but convincing answers. For example, whereas one software programmer might seek to impress by listing the coding languages and tools they master, another might do that by writing generally about coding paradigms.

Both Royakkers et al. (2018) and Whittlestone et al., 2019 point out the issue of equal treatment in digital environments: groups of people, such as linguistic minorities, may be disproportionately disadvantaged when efficiency or convenience are prioritized. Here, it seems to be important to be aware of subtle UI level or accessibility differences of application channels, particularly when new channels are introduced. Disclosing optional channels in the job description, and ensuring that there are opportunities for all applicants to express themselves are also practical ways to increase transparency.

4.2.4. Pitfall: Counterproductive UIs with unfair advantages

Based on HRM experts' perceptions, applicants typically have strong expectations regarding information security and a clean and user-friendly UI in the used systems, as well as a certain formality of the application procedure as a whole. For example, the proactive and fast-paced interaction style of pop-up chatbots can cause a feeling of hurry, which stands in tension with the intention to encourage potential applicants. Chatbots can surprise the candidate in an unpleasant way by producing a feeling of having to engage in a conversation. Furthermore, several participants said that the impressions and user experiences of chatbots in other contexts influence how they are perceived and emphasized that the impression is not often favorable, in part because of their perceived limits in interaction capabilities. In the long term, the applicant experience is compromised if the expectations of the application channels do not match the applicant's expectations.

While this issue primarily relates to user experience, we also recognize an ethical component to it. The perceived proactivity (up to aggressively requesting interaction) of the tool can decrease the applicant's sense of autonomy and control. Furthermore, concerns regarding fairness arise as novel forms of UIs and the media for applicant-recruiter interaction can be difficult to use for those who are unexperienced or unfamiliar with the underlying interaction metaphors. People who have used similar tools before might get an unfair advantage even if such technical skills were not relevant to the position in question.

While the issue of accessibility advantage due to technical competences has been identified in the literature (Truxillo et al., 2004), the introduction of increasingly diverse technologies tends to increase the digital divide. In HCI, this issue of power asymmetry among the applicants or between applicants and HRM experts has been discussed in the context of low-wage or low-resourced job seekers (Wheeler and Dillahun, 2018; Lu and Dillahun, 2021). Lu and Dillahun (2021) demonstrated how employers utilize online employment groups in social media to reach low-wage workers and how they pay attention to information that signals job readiness, finding that there remains an unaddressed power

imbalance between employers and job seekers. For example, while Facebook seems to be a popular platform in low-wage recruitment, it is designed to support personal rather than professional impression management. Consequently, researchers found that this unintentionally resulted in lack of activity by job seekers.

4.3. Comparing alternatives

At this stage, the alternatives are iteratively screened, filtered and compared against each other.

4.3.1. Tension: Utilizing existing data vs. initiating a new process

Applicants tend to update their profiles and applications only when deliberately seeking for a position, while they may develop new and improve their existing skills at any time. At the same time, in urgent needs for talent, organizations may utilize the information accumulated over time in their ATS, talent pools, or online work profiles. Therefore, the stored applicant data can be outdated in a matter of months. Moreover, applications and online profiles typically focus on recent developments, and they might not be able to highlight the most relevant information. A participant gave an example where someone had applied to an aviation themed project team without disclosing that they used to be a pilot and, therefore, had very relevant subject knowledge that resulted into an immediate selection. In this case, the information was found during a phone interview but, more broadly, systems and platforms that convey information, such as LinkedIn, tend to be organized according to latest information. At the same time, several participants argued that some of the most qualified workers do not have time to update their information.

This issue of operating with out-of-date information pertains particularly to the so-called talent pools, that is, databases where organizations or job board websites maintain lists of potential candidates accumulated over time. While talent pools can help to quickly identify seemingly relevant applicants, the accuracy of the information is often questionable. This introduces uncertainty to the organization seeking talent, as well as the problem of excluding potential candidates who lack awareness of the talent pool. Thus, introducing a fairness issue of inevitably not giving equal chance to succeed.

Furthermore, storing applicant information introduces ethical risks that the data will be used in ways that the applicant is not aware of, which is not only morally questionable but also against general data protection regulations. However, due to power asymmetries and opportunistic behavior, there is, for example, typically no way to know how the application data is analyzed. A participant working in a company that collects online data emphasized that people are not aware how their data is used, whether it is for positive or negative purposes:

'A lot of data about people is publicly available and can be exploited in ways that may not be clear or obvious to the person who has publicly shared their data [...] It may not be obvious to everyone that it is a threat, and it may indeed be the case that it will have some effect in the future or in the present.' (Study 1, ID:3. Startup CEO, analyzing social media, discussing risks in utilizing AI systems).

This dynamic relates to the privacy issues identified by Royakkers et al. (2018) and the tension between efficiency and privacy noted by Whittlestone et al. (2019). In response to these issues, recent regulative efforts have aimed to increase transparency that highlight talent acquisition as a high-risk context where systems

may impact future career prospects and livelihoods (e.g. in 2021 EU proposed law on artificial intelligence).

4.3.2. Tension: Efficiency vs. quality and fairness of the assessment

Many participants realized that the numbers of applications have generally risen as a result of introducing chatbots and other channels that lower the threshold of applying. High numbers of applications are generally desired by HRM experts, and the high quantities are further strengthened by many organizations' explorative and open mindsets while seeking new staff and following the supply in the job market. However, some participants were surprised to have noticed a flipside of this aim for quantity: increased share of low-quality applications. The interviewees gave examples of applications where applicants confessed that they are not applying seriously or where applicants lacked the minimum required skills for the job. These trends tend to decrease the time and attention given to any individual application, which naturally makes the comparison challenging and prone to arbitrary choices.

Consequently, HRM experts might need to filter out much of the applicants, which can practically mean that ATS is used to filter out dozens or even hundreds of applicants. While efficient in some sense, this leads to a risk of decisions being based on insufficient or surface-level information. Indeed, ATS tends to highlight only a few of each applicant's qualities, such as the name, job title, age, or a photo. While using names as IDs, for example, can make the comparison easier and help to remember who is who, there is an apparent risk of the much-discussed racial, gender and age biases. Further, due to heavy workloads, details in the applications might not be read carefully or the applicants might be quickly filtered out based on minor negative signs in the application. For instance, one participant elaborated that a recent or a long unemployment period typically creates a negative impression and may end up being filtered out before the applicant has a chance to explain themselves.

A related issue that stood out is that variation in HRM experts' interpretation of applications can result in disagreement among multiple assessors and further risks for bias. Acquiring an experienced professional typically involves several people from the organization in order to ensure the applicants' cultural fit, for example. While digital tools can support such democratic processes by providing easy ways to review and comment on the applications, involving several evaluators can counter-intuitively make talent acquisition more susceptible of subjective preferences. For example, a participant overseeing facilitators who assemble innovation teams explained that they might alternatively be very impressed by a detailed list of coding skills while a more detailed textual description might impress a senior facilitator more. (As noted above, applicants can also actively seek to manage these impressions.) In addition, another participant even questioned many stakeholders' ability to appropriately assess the applicants:

'First of all, less frequently recruiting supervisors might not have the skills or experience to conduct good job interviews, other than assessing whether the applicant is a nice person or not, that is, technical tests [...] Sometimes the kind of stuff happens, related to the similarity, that too similar persons are being looked for. I have seen many cases where people seek exact clones.' (Study 1, ID:21. Social media recruitment trainer, discussing how to target companies' brand message to applicants).

These responses highlight a notion increasingly emphasized also in fair ML literature: that the human-user component should

not be abstracted away when considering digital ethics (Selbst *et al.*, 2019). It seems that application channels should not only produce useful and relevant information through a fair process, but there should be also safeguards in place to ensure application data is also interpreted fairly in the talent acquisition pipeline.

4.3.3. Pitfall: Video interviews may introduce unpredictable conditions

One area of concern related to the technology-mediated interaction is the recording and analysis of video interviews. Asynchronous video interview (AVI) software allows the applicants to record answers to pre-defined questions with their personal camera and may provide the organization with automatic analysis of the applicants' skills in oral expression and body language, for example. However, the use of personal videorecording devices is quite a lot asked from an applicant and places them in a position that can appear even more asymmetrical than typically in talent acquisition. Several of our participants utilized AVI, and mentioned using software such as RecRight². Another notable example is HireVue³, which claims to reduce hiring bias and increase diversity and fairness.

When analyzing the videos, a practical risk is that decision-makers' attention turns to irrelevant things, such as the technical quality of the applicant's recording, the lighting in the room, or what is going on in the background. In our interviews conducted in 2019–2020, facial expression analysis was seen as a rising and concerning trend. In fact, HireVue recently removed a controversial feature that used algorithms to assign traits and qualities based on applicant's facial expressions, which involved obvious ethical concerns regarding privacy (and potentially transparency) (Kahn, 2021). Our participants further noted that adding a video interview can benefit applicants with technical skills even if such skills were not relevant to the sought job. There is also a salient pitfall in automating interactions with the applicant—namely, applicants may have fewer opportunities to ask counterquestions and clarifications.

On a positive note, however, asynchronous interviews give the applicant an opportunity to carefully answer specific questions, which can be especially valuable to those who are not at their best in live situations. Furthermore, asynchronous alternatives provide applicants with flexibility regarding when to participate, and they have several opportunities to record an answer. Both the questions and responses can be more thought-through compared to face-to-face situations where, as one participant exemplified, applicants' religious views or plans to build a family are often inquired more or less directly.

Recently, research on video interviews in HRM has become an increasingly popular topic in research, partly due to the increased potential the tools have presented during the COVID-19 pandemic (McColl and Michelotti, 2019; Suen *et al.*, 2019; Basch and Melchers, 2021; Mirowska and Mesnet, 2021; Dunlop *et al.*, 2022). For example, Mirowska and Mesnet (2021) interviewed professionals who raised justice issues with these tools, whereas Basch and Melchers (2021) found that recruiters tend to view these tools skeptically, and face-to-face settings are perceived to be fairer than conducting technology-mediated interviews (particularly AVIs). Notably, prior research generally tends to focus on applicant perceptions, thus, neglecting organizations' point of view (Basch and Melchers, 2021).

² <https://new.recright.com/>

³ <https://www.hirevue.com/>

4.4. Selecting the Most suitable match

This stage represents the temporally short, yet strategically crucial moment of making the final selection among the top applicants.

4.4.1. Pitfall: Under- or overestimating the value of human decision-making

Human values such as kindness and empathy were considered values that are endangered by increasing digitalization. When attracting talent, organizations often seem to emphasize the human dimension of decision-making. In practice, this can mean promising potential applicants that human decision-makers are in control of (and responsible for) evaluating and selecting, as is required by the GDPR. Some participants further emphasized that it is their personal goal and a value to provide feedback and consider applicants for other positions than the ones they applied to. For example, during the process, the HRM expert can see potential combinations of people, or several suitable applicants that should be selected. Allowing deviations from the standard process and established criteria can thus enable the HRM expert to create unexpected opportunities. For an unselected applicant, the human dimension of being transparent about what kind of opportunities the decision-maker saw based on the application can be very valuable.

HRM experts thus recognized a tension between the benefits of digitalization and respect for human dignity and autonomy: transparency was perceived as important to candidates' autonomous choices and control over the process for those of the decision-maker. More generally, these comments echo concerns raised by Royakkers et al. (2018) who consider that digitalization might instrumentalize persons, consequently leading even to dehumanization, and loss of social competences.

According to our interviewees, comparisons between technologies and humans are made with respect to further aspects of talent acquisition. Curiously, algorithms are expected to produce similar results that a human would, even though our participants simultaneously questioned whether human decision-making is optimal or provides an appropriate yardstick for a fair procedure. Kuncel (2017) provides examples of several oversimplifications and decision errors where the final selection depends on the characteristics of other people in the list of top applicants. For example, 'decoys tend to attract attention to other candidates who fully dominate them on all characteristics'. One participant further questioned whether legal security issues are appropriately considered in AI-assisted or even in manual decision-making:

'Probably the legal security issues of that specific individual come to mind. But are they more reliably secured even in manual recruitment, then?' (Study 1, ID:11. HR Consultant, discussing potential weaknesses of AI systems).

Overall, the participants' comments suggest that the introduction of digital tools can create a type of 'ripple effect' where the insertion of technology changes behaviors and embedded values of pre-existing systems (Selbst et al., 2019). In the present context, such an effect is seen in how insertion triggers reflective comparisons between the benefits and downsides of human decision-makers and technology, respectively.

4.4.2. Tension: Selecting quickly vs. slowly

The thoroughness of the selection process affects applicants' perceptions of procedural fairness (Gilliland, 1993). Practical reasons, such as time constraints or outstanding, positive first impressions of certain applicants, can simplify the process, however. A tension

between procedural fairness and utility in terms of process speed and convenience might emerge, respectively. For example, in the case of assembling innovation teams, having some experience and substance skills might get the applicant very close to being selected, despite the existence of other applicants and rich application information. In another example, a participant said that they do not want to overly complicate the process and explained that they would be ready to name the top three applications based on a quick scan of dozens of applications. Indeed, it seems that digital systems (such as ATS) can encourage collecting and comparing a pool of candidates, whereas managers and company leaders often aim for quick solutions. One participant noticed that going through the digitally assisted process can seem slow especially when there is a chance to present suitable candidates to managers within the day. It seems that LinkedIn, in particular, can amplify the risk by providing or presenting alternatives in an attractive way that encourages skipping steps.

It seems that shortening the process is of the main selling points for many of the tools. Quick processes can be appropriate in other forms than external market-based talent acquisition, like in proactive headhunting (or sourcing) and when serendipitous encounters are looked for. Nevertheless, the challenge remains that, for example, ATS tools can be used in unexpected ways (e.g. cutting corners in the talent acquisition process). This relates to the 'framing trap' discussed by Selbst et al. (2019), who note that even value-sensitive digital tools (e.g. recommendation tools with fairness guarantees) can be used inappropriately in ways that compromise the adherence to the values in question (e.g. practitioners might act on tools' recommendations inconsistently). Adding to this issue, there are numerous other reasons why practitioners might not use staffing tools as intended, for example, 'because they perceive it as going against tradition, sapping their autonomy, being terribly confusing, requiring too much work, or simply saying "that doesn't look like what good workers do"' (Kuncel, 2017).

4.4.3. Pitfall: Portability trap in copying metaphors

When discussing future developments of talent acquisition systems, it seemed typical to regard talent acquisition as a simplified choice of the right person to the right job, benefitting from a list of recommendations based on a scoring system. This highlights the nature of talent acquisition as a professional social matching activity (Olsson et al., 2020). It appears that popular examples of matching apps from the dating context (e.g. Tinder) may set the standard and expectations how matching of people is generally regarded. In fact, one participant had conducted a project on the topic of creating matching apps, finding that on the user interface level the swiping gesture specifically seems to be exclusively reserved for the dating context. Starting one-to-one conversations with someone on shared interests by using a mobile application can disturbingly resemble the logic of dating apps:

'The application (the project members created) was about learning science. Team members discussed the way of communication, how the other person (within the app) would know that you now want to learn. There was feeling of being like in a dating app. You pick a person because s/he looks interesting, or s/he would like to talk about an interesting topic. It is very hard to get rid of the feeling.' (Study 2, ID:31. A participant who assembles and coaches higher education student teams, 10 years of experience).

Reflecting the previous section (4.4.2), copying metaphors from the dating context can also encourage making quick decisions in situations where all candidates or applicants should be evaluated fairly. Skipping phases can compromise procedural fairness in a

similar vein as in Section 4.1.3 where other aspects of speedy approach were discussed.

These issues with copying metaphors resembles the portability trap, as described by [Selbst et al. \(2019\)](#): ‘solutions designed for one social context may be misleading, inaccurate, or otherwise do harm when applied to a different context’. Some of our participants emphasized how the professional working context should be strictly separate from other forms of connections. Therefore, while designers are often taught to aim for portability ([Selbst et al., 2019](#)) and while copying established matching design solutions seems tempting, it should be questioned and preferably consulted with HRM experts in which situations metaphors from other types of social matching maybe utilized. Based on the findings, we can confidently recommend avoiding swiping gestures as mechanisms of selection in talent acquisition.

5. DISCUSSION AND CONCLUSIONS

We sought to empirically understand practical constraints that arise in HRM experts’ work, thus responding to the criticism that research on digital ethics tends to abstract away from specific social contexts ([Selbst et al., 2019](#); [Whittlestone et al., 2019](#)). Our analysis implies that digitalization, while improving gathering and conveying of data, has introduced or amplified several tensions between business and ethical values across the decision-making process of talent acquisition. Notably, these tensions in part arise due to common pitfalls in digitalizing such delicate and human-centered processes. In what follows, we first reflect on the general values and considerations that we observed across the result categories.

5.1. Reflections

5.1.1. Values and value tensions

Recalling the categorization of trade-offs mentioned in Section 2.2, we note that genuine trade-offs are rare. Rather, most tensions arise due to epistemic uncertainty, constraints of practical circumstances, conflicts of interests between stakeholders, and other contingent factors. Accordingly, HRM experts do not typically face strict moral trade-offs where one set of values would have to be prioritized over another ([Whittlestone et al., 2019](#)). Practical constraints often include the availability of digital tools or workforce, high costs, and administrative demands, such as need for a speedy acquisition process.

The following four upper-level categories of values were implicated in the interviewees’ discussions about digital talent acquisition:

- *Utility*, understood as the satisfaction of business needs (e.g. needs for efficiency, convenience, ease, and speed) and the aims of digital talent acquisition
- *Autonomy*, understood as (the capacity for) self-determination, to which privacy and transparency are considered instrumentally valuable ([Laitinen and Sahlgren, 2021](#))
- *Fairness*, understood as a legal norm and a socially desirable goal requiring that candidates or applicants be treated without unacceptable bias
- *Balanced power*, understood as an ideal situation wherein relevant parties are symmetrically positioned with respect to epistemic resources and leverage in negotiating terms of agreement

[Table 2](#) categorizes the findings of our study according to the used 3-fold conceptual framework and also to reflect the study’s core aims. The purpose here is to bridge the gap between abstract

values and concrete cases. To the best of our knowledge, this is the first attempt to recognize values and stakeholders at this level of granularity in this context. By explicitly recognizing key values and value conflicts, on the one hand, and the stakeholders affected therein, on the other, we can begin to develop guidelines and standards that are not only ethically aware but rigorous and practically relevant ([Whittlestone et al., 2019](#)).

5.1.2. Binary considerations regarding digital ethics

The first tendency that stands out from the material relates to patterns in HRM experts’ moral reasoning. When considering whether to digitalize specific aspects of talent acquisition, HRM experts’ considerations tended to sustain a binary divide between human and automated decision-making. This pattern was most salient in discussions concerning digital systems and their risks and benefits, with human decisions typically constituting the baseline for HRM experts’ comparisons in these respects (as noted in Section 4.4.1). Reflections on transparency, privacy and fairness in this technological context often involved comparisons with how the values are currently met when humans conduct or are involved in the relevant tasks. Similarly, the ‘human element’ of the talent acquisition process was perceived as valuable, highlighted at times by participants who emphasized user control and treating applicants with dignity. This tendency suggests that, in our cultural context, HRM experts’ expectations and ethical considerations regarding digital talent acquisition are grounded in applicants’ and candidates’ practical and situated needs—our interviewees seemed quite sensitive to their normative expectations concerning talent acquisition and how the implementation of digital tools might change things for them.

From the perspective of moral reasoning, however, it would seem that comparisons that maintain binaries can also restrict or misguide ethical considerations (as opposed to facilitating ethical decision-making). On the one hand, both human and technological actors inevitably have their respective upsides and downsides. Digital tools can, for example, structure a given part of the process and improve its ease and speed, but human decision-makers can provide lenience and flexibility by deviating from the customary way of doing things when appropriate. On the other hand, it may be the case that humans and digital tools do not always introduce trade-offs between different values (e.g. consistency, utility and individualized consideration) but, rather, comprise different mechanisms through which an ethical issue arises.

Comparisons between the benefits and risks of digital systems, on the one hand, and human decision-makers, on the other, can inform decisions concerning the use of specific digital tools at a given stage of the talent acquisition process. However, there is a risk that the tendency to revert to the immediate vicinity of the binary poles (namely, digital systems and humans) in ethical consideration may actually preclude the identification of appropriate risk management measures that could be implemented (i) throughout the process and (ii) at the level of the sociotechnical system. A processual, sociotechnical systems perspective on ethics in digital talent acquisition would focus not only on individual stages and digital tools but also on how technological and human elements interact, underlining the importance of introducing incremental control through redundancy and ‘layered’ ethical safeguards. For example, to mitigate issues with bias, an appropriate approach could involve measures to mitigate related risks at a processual and systemic level. In practice, this might involve, for example, combining technical measures (e.g. UI design

TABLE 2. Tensions and Pitfalls in relation to upper-level value categories, related to specific stakeholders (in parenthesis). The roman numerals refer to the stage of the process. When necessary, the table indicates the relevant stakeholders using an initial: candidate (C), applicant (A) and HRM expert (H). Also, there are sometimes tensions between values—for example, in the case of pitfalls—and these are marked with ‘-’.

Tensions and pitfalls	The value(s) in question
I Short-term vs. long-term planning Abstract vs. detailed job descriptions Ease and speed of applying vs. detailed information Uncertainty vs. inclusion	Short-term utility – long-term utility: <i>Solutionism can lead to a practical trade-off between short- and long-term benefits</i> Utility – fairness (C): <i>Attracting suitable candidates versus fairness in terms of providing equal opportunities</i> Tension between types of utility: <i>A lower threshold vs. comprehensive information</i> Balancing power (H), autonomy (H), fairness (H) and utility: <i>These result from common pitfalls of group decision-making</i>
II Requesting detailed data vs. respecting privacy Candidates' data rights vs. tracking their interactions Unequal treatment of applicants across application channels Counterproductive UIs with unfair advantages	Utility, fairness (C) and autonomy (C): <i>Detailed data is necessary for making accurate decisions but can lead to bias and privacy violations</i> Utility – autonomy (C): <i>Ensuring transparency and privacy is necessary for autonomy, but tracking has business benefits</i> Unfairness (A): <i>A practical trade-off: additional channels increase the reach but can result in unequal treatment</i> Unfairness (C), lack of utility (H) and diminished autonomy (C): <i>Solutionist aspirations in UI design may lead to issues with accessibility and respect for autonomy</i>
III Utilizing existing data vs. initiating a new process Efficiency vs. quality and fairness of the assessment Video interviews may introduce unpredictable conditions	Autonomy (C) – utility (H): <i>Reanalyzing existing data on candidates versus collecting new data involve distinct risks for privacy and utility, respectively</i> Utility – fairness (A): <i>The pursuit of efficiency may lead to unfair treatment if the actual human-user is not considered</i> Utility – respect for autonomy (A) and fairness (A): <i>This serves convenience but introduces risks for privacy violations and possible bias</i>
IV Under- or overestimating the value of human decision-making Selecting quickly vs. slowly Portability trap in copying metaphors	Autonomy (H): <i>There is difficulty in recognizing the benefits and shortcomings of humans and/or technology</i> (Procedural) fairness (A) – utility: <i>Results from the framing trap and practical/human constraints including lack of motivation or skills</i> Fairness toward applicants – utility: <i>Portability aspirations lead to failures in understanding contextual values and needs</i>

and fairness constraints), operational safeguards (e.g. algorithmic audits (Wilson *et al.*, 2021) and diverse teams of people assessing applications), feedback channels (e.g. feedback for and from the applicants), and access to remedies (e.g. the right to contest decisions).

From this perspective, neither the benefits nor the downsides of technical tools and humans are viewed as absolute benefits or inevitable downsides that are ‘locked in’ at a single point of the talent acquisition process. Rather, they become relational and interacting aspects of a broader sociotechnical process that can complement (or run counter to) one another, with each aspect configuring the process as a whole.

5.1.3. Technology and codification of standards make immediate ethical concerns in talent acquisition more visible

Talent acquisition is a delicate process involving many stakeholders, expectations and behaviors. For example, applicants have different expectations regarding the process and exhibit different behaviors when applying for a job (e.g. impression management). Meanwhile, HRM experts differ in what they search for in

applicants. Digital systems, however, tend to codify standardized structures into tasks taking place at different stages of talent acquisition, ranging from writing job descriptions to assessing applicants. Standardization clearly has its merits in terms of improving efficiency, consistency and comparability. For example, standardizing application forms across channels would allow for equal treatment of potential applicants (and thereby resolve the tension identified in Section 4.2.3). However, digitalization—especially in relation to its standardizing tendency—raises many ethical questions, such as power imbalances between stakeholders (e.g. applicants and HRM experts) and within each stakeholder group (e.g. between experts and generalists among applicants, and between programmers and team assemblers in organizations). The structure codified by a given tool as the operative standard will have different consequences for different stakeholders and will empower some but disadvantage others. A pattern we observed was that ethical questions became increasingly salient, especially in relation to the issue of standardization. For example, consequences for fairness in treatment of the applicants and for decision makers’ access to information during the process were somewhat frequently discussed in relation to the issue of standardization. In this sense, the HRM experts

were quite sensitive to the issues introduced by technology, particularly in terms of its tendency to codify practices and values.

5.1.4. Solutionism drives the market, but tends to backfire for organizations

The set of challenges that we identified pertains to incompatibilities between available digital systems and organizations' needs regarding talent acquisition. Business needs, and organizational pressures and constraints seem to lead organizations and HRM experts to favor data sources that are continuously 'on tap' (e.g. LinkedIn) and systems or designs (e.g. swiping logic) that are easily implemented and portable. This, in turn, incentivizes them to procure established technologies for talent acquisition from vendors providing tools that are designed for portability, but which address only narrow tasks in the talent acquisition pipeline. Meanwhile, specific needs regarding digital systems inevitably vary depending both on how organizations conduct talent acquisition and on external factors (e.g. overall labor market conditions).

We observe that such dependency on established technologies gives rise to various undesirable outcomes. First, it may simply be that organizations do not get what they need from a given system. The adapted digital tools can be counterproductive (e.g. design features and UIs might repel potential applicants), and their limitations can even prevent HRM experts from gaining relevant information (e.g. application forms lack open text answers). The prevalent software-as-a-service model can also be uncomfortable for organizations whose needs for talent fluctuate unpredictably, while organizations searching actively and continuously for talent through talent pools may fail to reach potential applicants due to their exclusivity.

Second, the dependency on 'monolithic vendors' that offer to digitalize various talent acquisition tasks (e.g. applicant tracking systems) can create 'ripple effects' that undermine the pursuit of efficiency and ease that motivate the adoption of digital tools in the first place. This pitfall is apparent in cases where the procurement or adoption of a tool poses, for instance, the need to restructure HRM practices around the employed system, or to build additional systems in order to reap the benefits of the original system. In other words, seemingly portable digital tools combined with solutionist aspirations can backfire due to mismatches between available digital systems and organizations' specific needs, and due to the extra effort and implementation that costs incur.

Third, dependency on 'monolithic vendors' can also be problematic from the perspective of ethically conscious procurement. As our findings suggest, HRM experts are mindful of compliance and the ethical issues encountered in the context of digitalization, but the current market for digital tools is likely to be less sensitive in these respects. Especially in the case of reliance on third-party platforms, HRM experts had to weigh possible benefits (e.g. increased reach and effectiveness) against the ethical risks and costs to which they would be committing. For example, while the possibilities offered by LinkedIn and video interview software were recognized, so were some of the issues related to privacy or bias associated with the with LinkedIn and video interview software. From the perspective of HRM experts and their respective organizations, the market for tools for digital talent acquisition remains focused on business values—perhaps it is even characterized by the Silicon Valley mentality of 'moving fast and breaking things'—rendering ethically conscious procurement difficult. This

issue also underlines the broader issue that the conditions for ethical digitalization are dependent on the technology market, its incentive structures, and the power that different agents hold therein.

5.2. Future work

Our approach was exploratory, which offers several potential directions for future research. Even though extant literature on digital ethics is already thorough, we argue that more empirical research is needed in order to expand the topic and gain more understanding of the possible ethical tensions found in the digitalization of specific sociotechnical contexts. While still remarkably understudied, digital ethics in talent acquisition has recently started to gain attention among HCI researchers (Marks, 2022), focusing particularly on the issues involved in algorithmic decision-making (Raghavan et al., 2020; Sánchez-Monedero et al., 2020). Methodologically, especially promising approaches include ethnographical studies where HRM experts are observed that are in a similar vein to the study by van den Broek et al. (2021).

Our Findings section introduced several tensions and pitfalls that should be further studied. Digital tools could be studied in terms of considering the pertinent ethical values, particularly with the aim of practically guiding the trade-off choices. Some tasks (e.g. conducting video interviews) have been studied in HRM research; however, we emphasize the need to consider the task's connection to the overall process (i.e. how it affects the choices made in the following tasks).

So far, the research has mostly focused on applicant perceptions (McCarthy et al., 2017). Therefore, in line with recent research (e.g. Lu and Dillahun, 2021), we call for more research from the perspective of HR professionals. According to our analysis, various stakeholders—such as line managers, HR department leaders, company leaders, and people who are developing digital solutions for HR—seem to be fruitful sources of subjective insights and experiences.

5.3. Limitations and closing remarks

We first note that the data is collected in one Nordic country and most likely represents Scandinavian work culture and values. Therefore, the findings are not generalizable for all cultures and talent acquisition practices. Second, the interviews did not systematically consider organizational differences across, for example, fields of business, size, or organizational culture. Public and private organizations might have different requirements regarding the talent acquisition process and the values to consider. As for the analysis, it is evident that the identified aspects are, first, formed through subjective interpretation and, second, limited by the concepts and viewpoints of the specified conceptual framework.

Furthermore, as Ruggiano and Perry (2019) recommend, when utilizing qualitative secondary analysis, the involvement of researches in the parent studies and the present studies should be reported. In our case, two of the authors were involved in all the parent interview studies where their responsibilities covered data collection, data analysis, and writing the publications.

All in all, talent acquisition in organizations includes complex decision-making, strategic and organizational activities, and repetitive routine tasks that could all, in principle, be supported by IT. However, the expected benefits do not come without ethical risks that require navigation among pitfalls, tensions, and trade-offs. This study is an attempt to identify such concerns from a rich empirical data set and with the help of a conceptually

thorough framework. This serves as a basis for raising practical considerations for both the developers and users of talent acquisition systems. We particularly encourage further research on the pitfalls involved in digitalizing these kinds of sociotechnical contexts that feature a breadth of requirements and principles to follow, and complex decision-making that significantly influence both the involved organizations and individuals.

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DATA AVAILABILITY

As the present work was a secondary analysis, no new data were generated in support of this research. Due to ethical concerns of privacy and deanonymisation, the original qualitative raw data cannot be made available. However, kindly note that we present carefully selected extracts from the raw data in the 'Results and Reflections' section.

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