

# Blinded by “algo economicus”: Reflecting on the assumptions of algorithmic management research to move forward

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## Funding information

School of Behavioural, Management and Social Sciences of the University of Twente; Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek

## Abstract

This paper reflects on the paradigmatic assumptions and ideologies that have shaped algorithmic management research. We identify two sets of assumptions: one about the “ontology of algorithms” (which holds that human resource management [HRM] algorithms are non-human entities with material agency) and one about the “ontology of management” that HRM algorithms afford (which understands algorithmic management as a form of control for maximizing economic/shareholder value). We explain how these core assumptions underpin existing research of HRM algorithms, causing blind spots that hinder new ways of understanding and studying algorithmic management. After identifying and unpacking the assumptions and blind spots, we offer avenues to overcome these blind spots, allowing for future research based on new ideological assumption grounds that will help move algorithmic management scholarship further in significant ways.

## KEYWORDS

agency, algorithmic management, assumptions, HRM algorithms, ontology, reflection

## 1 | INTRODUCTION

Recent technological developments—such as the availability of machine-readable data about workers' behaviors, machine-learning techniques, and the emergence of online labor platforms—have propelled academic inquiry into algorithm-enabled human resource management (HRM) activities in domains such as staffing, performance management, compensation, workforce planning, and job design (Cheng & Hackett, 2021; Leicht-Deobald et al., 2019; Meijerink & Bondarouk, 2023; Strohmeier & Piazza, 2015). The deployment of HRM algorithms has been called “algorithmic management,” that is, the use of digital data processed by software algorithms for augmenting and/or automating HRM-related decision-making (Meijerink et al., 2021). It has almost been 10 years since Lee et al. (2015) published their seminal study on the use of algorithms by the Uber ride-hailing platform for (semi)automating the management of remote “gig” workers. Since then, parallel developments in more standard

work settings have emerged as “standard” workers (e.g., full-time and/or employed) are nowadays also managed by means of HRM algorithms without (or with little) human oversight (Cheng & Hackett, 2021; Jarrahi et al., 2021). Accordingly, scholars of algorithmic management have explored the use and consequences of HRM algorithms across a range of empirical settings using different conceptual lenses (Kellogg et al., 2020; Leicht-Deobald et al., 2019; Meijerink & Bondarouk, 2023; Parent-Rocheleau & Parker, 2022).

It is through the developments mentioned above that the algorithmic management literature has matured in diverse ways. First, after a relatively slow start since the seminal paper by Lee et al. (2015), the number of published scholarly works on algorithmic management has surged in the past few years. Second, the algorithmic management literature has advanced in terms of conceptual refinement. The notion of algorithmic management has been defined in greater detail, with scholars relying on theories such as labor process theory and job demands-resources model to detail

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how HRM algorithms equate with rational control (Kellogg et al., 2020) and normative control mechanisms (Galière, 2020) or work designers (Parent-Rochelleau & Parker, 2022). Third, the maturity of the algorithmic management literature is shown by review studies (Cheng & Hackett, 2021; Malik et al., 2022; Parent-Rochelleau & Parker, 2022) that synthesize empirical insights on algorithmic management and its consequences. In doing so, these reviews summarize that algorithmic management impacts worker-related outcomes such as autonomy (Meijerink & Bondarouk, 2023; Rahman et al., 2023; Shapiro, 2018), personal integrity (Leicht-Deobald et al., 2019), dignity (Lamers et al., 2022), and job quality (Goods et al., 2019; Wood et al., 2019).

Given the conceptual and empirical richness of the algorithmic management literature, we argue that the time is right to take the next step by reflecting on the assumptions underlying this stream of literature. Here, assumptions are seen to include ontological, epistemological, and methodological assumptions (i.e., paradigmatic assumptions) as well as political- and moral-related assumptions (i.e., ideology assumptions) that underlie a stream of literature (Alvesson & Sandberg, 2011; Burawoy, 1979; Burrell & Morgan, 1979). Reflecting on these assumptions is important as it enables researchers to problematize existing literature, generate new ways of thinking about a phenomenon at hand, and thereby outline new lines of research (Alvesson & Sandberg, 2011, 2020). Accordingly, our study aims to identify, explicate, and reflect on some core assumptions underlying the algorithmic management literature.

Specifically, our study takes the ontological assumptions of current algorithmic management literature as a starting point. Following the two main components of the term “algorithmic management,” we identify two sets of assumptions that jointly reflect the notion of what we call “algo economicus” (i.e., assumptions in the existing literature that HRM algorithms are more or less independent entities that serve to meet the rational aims of economic growth and welfare creation). First, given the centrality of algorithms in current studies on algorithmic management, we reflect on what we refer to as the “ontology of algorithms” present in the algorithmic management literature, that is, the assumption that HRM algorithms are “out there” as technological/non-human entities that possess a form of material agency, apart from human intervention. Second, given the central role of (human resource) management in algorithmic management scholarship, we analyze the “ontology of management” by identifying the assumptions that underpin algorithmic management research regarding the objectives and outcomes that HRM algorithms help to realize. Although these prevailing assumptions helped advance the algorithmic management literature, they also create blind spots that may hamper thinking about HRM algorithms in new ways. Accordingly, we contribute by identifying several blind spots that these ontological assumptions cause and outlining avenues to overcome them by proposing new ways of thinking about algorithmic management and suggesting new avenues for algorithmic management research (i.e., linking to the field's epistemological, methodological, and ideological assumptions).

## 2 | ALGORITHMIC MANAGEMENT: A CONCEPTUAL ACCOUNT

As Bacharach (1989) noted, assumptions constrain and bind conceptual claims on how, why, and when theoretical constructs relate. Therefore, before identifying and reflecting on the assumptions underpinning algorithmic management research, it is essential first to take stock of the conceptualization of algorithmic management (as a theoretical construct) and related outcomes.

Various scholarly works in the HRM literature (Duggan et al., 2020; Leicht-Deobald et al., 2019; Meijerink & Bondarouk, 2023), and adjacent fields such as organization studies (Newlands, 2021), sociology of labor (Veen et al., 2020), and general management (Kellogg et al., 2020), define algorithmic management (see Table 1). Notwithstanding the differences, these definitions unite in calling attention to (at least) three commonalities. That is, algorithmic management is seen to concern (1) the use of digital data, which (2) are processed through software algorithms for (3) augmenting and/or automating HRM-related decision-making (Meijerink et al., 2021).

First, algorithmic management relies on data that are presented as binary digits that a computer can read and process. In most cases, this concerns worker-/HR-related data that capture worker behaviors, actions, locations, performance, emotional states, and/or social relationships (Garcia-Arroyo & Osca, 2021).

Second, the processing of these data happens with software algorithms. This means that data collection and availability are a “sine qua non” for algorithmic management since software algorithms cannot perform without them. HRM algorithms can be classified based on how they process digital data. Building on the work of Davenport (2013) and Souza (2014), Leicht-Deobald et al. (2019) offer a three-legged typology of algorithms that process worker- and HRM-related data in diverse ways: descriptive, predictive, and prescriptive algorithms. Descriptive algorithms aim to make inferences from the past and how this influences the present with simple statistics such as means, correlations, or clustering. In HRM, this may involve correlating incumbent employees' personality traits and competences with outcomes such as turnover, absence, or job performance (Cheng & Hackett, 2021; Strohmeier & Piazza, 2015). Predictive algorithms process past or real-time data to forecast the likelihood of a (desired) outcome or situation (Leicht-Deobald et al., 2019). Applied techniques involve advanced regression analysis, machine-learning algorithms, and data mining approaches (Davenport, 2013; Souza, 2014). An example of a predictive HRM algorithm forecasts a job candidate's future performance or person-job fit (Cheng & Hackett, 2021). Finally, prescriptive algorithms outline what decisions should be taken for different possible scenarios. Based on simulations and scenario-based techniques, studies argue that prescriptive algorithms either augment human decision-makers by informing them what course of action to pursue (e.g., which job candidates to invite for a job talk) or fully automate managerial decision-making by executing an HRM activity themselves (e.g., assigning work tasks to workers in a warehouse) (Leicht-Deobald et al., 2019; Meijerink et al., 2021).

**TABLE 1** Exemplary definitions of algorithmic management (and related terms).

Author(s)	Year	Definition
Lee, Kusbit, Metsky and Dabbish	2015	“Algorithms that assume managerial functions and surrounding institutional devices that support algorithms.” (p. 1)
Möhlmann and Zalmanson	2017	“Oversight, governance, and control practices conducted by software algorithms over many remote workers [...] characterized by continuously tracking and evaluating worker behavior and performance, as well as automatic implementation of algorithmic decisions.” (p. 4)
Leicht-Deobald, Busch, Schank, Weibel, Schafheitle, Wildhaber and Kasper	2019	“Algorithms designed to support and govern HR decisions.” (p. 2)
Wood, Graham, Lehdonvirta and Hjorth	2019	“An extension of ‘customer management’ strategies.” (p. 62)
Duggan, Sherman, Carbery and McDonnell	2020	“A system of control where self-learning algorithms are given the responsibility for making and executing decisions affecting labor, thereby limiting human involvement and oversight of the labor process. It replaces some of the tasks and processes that workers typically engage with by using algorithms that are developed by the very same individuals’ data on the platform.” (p. 119)
Gal, Jensen and Stein	2020	“Computational techniques that leverage digital data from multiple organizational areas to reflect different facets of members’ behavior.” (p. 1)
Cheng and Hackett	2021	“HRM algorithms are computer programs of a heuristic nature that use economical input of variables, information, or analytical resources to approximate a theoretical model, enabling an immediate recommendation of screening, selection, training, retention, and other HR functions.” (p. 8)
Jarrahi, Newlands, Lee, Wolf, Kinder and Sutherland	2021	“Socio-technical process emerging from the continuous interaction of organizational members and the algorithms that mediate their work.” (p. 2)
Möhlmann, Zalmanson, Henfridsson and Gregory	2021	“The large-scale collection and use of data on a platform to develop and improve learning algorithms that carry out coordination and control functions traditionally performed by managers.” (p. 2001)
Newlands	2021	“An assemblage of computational processes, which automatically generate data, evaluate worker behavior and assign labor activities.” (p. 723)
Meijerink and Bondarouk	2023	“System of control that relies on machine-readable data and software algorithms that support and/or automate managerial decision-making about work.” (p. 3)

Third, this practice of using software algorithms is to support and govern HRM activities and HRM-related decision-making. Such algorithm-enabled HRM activities span a range of domains, including staffing, training, performance appraisal, compensation and benefits, and workforce planning (Cheng & Hackett, 2021; Meijerink & Bondarouk, 2023; Strohmeier & Piazza, 2015). These manifestations of algorithmic management also occur and are studied in different contexts. In its early days, algorithmic management research derived empirical insights from the gig economy, not unsurprisingly, since online labor platforms like Uber, Deliveroo, and Amazon Mechanical Turk are known for algorithmically managing freelance workers without (much) human intervention (Duggan et al., 2020). Indeed, one of the seminal papers on algorithmic management by Lee et al. (2015) is an empirical study of algorithm-enabled HRM practices such as work allocation, performance evaluation, and surge pricing (i.e., compensation) by the Uber ride-hailing platform. Jarrahi et al. (2021) noted that “while algorithmic management has been observed primarily within the platform-mediated gig economy, its transformative reach and consequences are also spreading to more standard work settings.” (p. 1). Indeed, research shows that HRM algorithms have permeated more traditional workplaces and provide insights to line/HR managers by predicting turnover and recruitment outcomes, estimating job satisfaction, identifying the most motivated employees, modeling job satisfaction-job performance

relationships, or prioritizing investments in capabilities of HR specialists (Cheng & Hackett, 2021; Strohmeier & Piazza, 2015).

### 3 | FROM ASSUMPTIONS TO BLIND SPOTS AND AVENUES FOR FUTURE RESEARCH

As holds for all research streams, the algorithmic management literature is underpinned by assumptions. In this section, we identify and unpack several of these assumptions, showing where they appear in the literature and why there is value in revisiting them (i.e., to identify blind spots that open up avenues for new, impactful research into algorithmic management). These assumptions cluster into two groups: assumptions about HRM algorithms (which we refer to as the “ontology of algorithms”) and assumptions about the management that HRM algorithms afford (which we refer to as the “ontology of management”)<sup>1</sup> (see Table 2).

#### 3.1 | The “ontology of algorithms” as “being out there”

The first category of assumptions we identify that underpin algorithmic management studies revolves around the quintessential

**TABLE 2** Summary of the assumptions, blind spots, and avenues for future research.

	Ontology of algorithms	Ontology of management
Main assumption	<p>HRM algorithms are non-human entities “out there” in the world. Reflected by assumptions about:</p> <ul style="list-style-type: none"> <li>• Material agency</li> <li>• Opacity</li> <li>• Anthropomorphism</li> <li>• Automation</li> </ul>	<p>HRM algorithms are economic instruments for profit maximization. Reflected by assumptions about:</p> <ul style="list-style-type: none"> <li>• Managerial control</li> <li>• “Uberization”</li> </ul>
Blind spots (risk of overlooking)	<ul style="list-style-type: none"> <li>• The role of humans as (pro-) active agents in algorithmic management</li> <li>• Data as a necessary input for HRM algorithms</li> </ul>	<ul style="list-style-type: none"> <li>• Alternative HRM philosophies, beyond control-based HRM</li> <li>• Plurality of algorithmic management (i.e., richness in organizational culture, time, context, space)</li> </ul>
Overcoming blind spots and avenues for future research	<ul style="list-style-type: none"> <li>• Examine values and data inscribed into algorithmic management</li> <li>• Acknowledge the ontological differences between algorithms and human actors (Salles et al., 2020)</li> <li>• Let go of the black box metaphor</li> <li>• New epistemological grounds, such as interdisciplinary research (e.g., with computer scientists and adjacent disciplines)</li> <li>• New methodological grounds, such as action- and design-driven approaches</li> </ul>	<ul style="list-style-type: none"> <li>• Examine (consequences of) “high-road” algorithmic management</li> <li>• Adopt alternative theoretical frameworks to study algorithmic management, for instance, those within the humanistic paradigm</li> <li>• Go beyond Uberization and analyze algorithmic management in different organizational forms like cooperatives</li> <li>• Adopt new examples and metaphors</li> </ul>

Abbreviation: HRM, human resource management.

“algorithms” as key phenomenon under study. Here, the central assumption underlying algorithmic management research is that algorithms are considered to be autonomous “things” that are “out there in the world.” This assumption fits a realist ontology of algorithms, implying that HRM algorithms are non-human entities “out there” independently acting in the world of work and leads to the belief that HRM algorithms are readily available for academic study. This

approach may be considered logical, given that it is common practice for social scientists to study existing phenomena and draw conclusions from their observations. The assumption that algorithms are readily available to be scrutinized is supported by the fact that algorithms are ubiquitous in the workplace, and their effects can be seen in various aspects of working life and the realm of management (Cheng & Hackett, 2021; Jarrahi et al., 2021; Meijerink & Bondarouk, 2023).

This ontological realist perspective on algorithms reinforces the assumption that HRM algorithms are “out there” and highlights a strong reformative character and ascribes power to HRM algorithms. The assumption holds that HRM algorithms are technological entities/artifacts that lead research to put a strong emphasis on their material agency, that is, the “capacity for non-human entities to act on their own, apart from human intervention” (Leonardi, 2011, p. 148). This capacity of algorithms to act without human involvement as non-human entities manifests in the theoretical backdrop of selected algorithmic management studies. Salient are examples of algorithmic management studies informed by labor process theory that enforce a material agentic perspective on HRM algorithms. Labor process theory highlights how management seeks to establish control over workers to activate their labor efforts to maximize the economic value of these efforts (Burawoy, 1979). On this basis, HRM algorithms are described as “a boss that controls workers” (Adams-Prassl, 2019; Duggan et al., 2020) or a technological entity that augments and automates human management (Raisch & Krakowski, 2021). Similarly, theoretical grounds that are intrinsically less involved with matters of agency and control are built on the assumption that HRM algorithms are “out there” with material agency. For example, those adopting a job demands-resources (JD-R) model argue that HRM algorithms are “work designers” (Parent-Rocheleau & Parker, 2022) that offer job demands and resources that reside outside the control of workers (Demerouti et al., 2001), thereby suggesting that HRM algorithms are non-human entities that have the capacity to engage in the act of work design.

While the dominant approach in algorithmic management studies is to treat algorithms as existing technological entities that can be studied conceptually and empirically, simultaneously, many studies build on the idea that HRM algorithms are opaque. Scholars speak of algorithmic opacity when an algorithm or automated decision-making system's inner workings are difficult to understand (Burrell, 2016). Numerous studies on algorithmic management have shown how algorithmic opacity concerns the “inherent opaqueness” of algorithmic management for workers (Bucher et al., 2021). For instance, Rahman (2021) displays how the unpredictability of criteria for success in algorithmic management leads platform workers to experience an “invisible cage,” which refers to a form of control that impacts the working life yet is difficult for workers to decode (p. 947). In line with this, Curchod et al. (2020) show how working “for algorithms” comes with asymmetries in visibility and knowledge among the platform users, leading to asymmetries in power and difficulties for workers to exercise their agency. More generally, Bucher et al. (2021) share how

this opacity comes forward by a “lack of disclosure” about data sources (Orlikowski & Scott, 2015) and mechanisms functioning “under the surface” (Introna, 2016, p. 25).

The issue of algorithmic opacity is echoed in the literature using the metaphor of a “black box” (Faraj et al., 2018; Heiland, 2022). For example, Faraj et al. (2018) talk about “black-boxed performance,” especially for learning algorithms, because they can evolve and change their parameter weights when they are inputted with new data. Rosenblat and Stark (2016) explain how an information asymmetry is created between the platform and the worker, resulting in intended opacity. Other studies nuance the debate on the opacity of HRM algorithms. For instance, Jarrahi et al. (2020) speak of technical and organizational opacity, thereby distinguishing different ways HRM algorithms can be opaque. Irrespective of which approach to opacity is taken, the assumption that HRM algorithms are opaque leads to the belief that there is an inherent lack of transparency, which problematizes efforts to understand algorithms and their functioning (for both scholars and those affected by HRM algorithms). Together, the idea that HRM algorithms might be (to some extent) never entirely understandable and the idea that HRM algorithms are, in fact, “out there” as non-human entities that have the capacity to act—creates a view on HRM algorithms as technological entities that are in fact (re-)shaping the world of work, in ways that are difficult to understand and opaque.

Intricately linked with this view on algorithms as entities out there that are difficult to grasp is the tendency to anthropomorphize them. As a result, studies show how those affected by algorithms tend to anthropomorphize them to find an answer or interpret their agency (Salles et al., 2020). Anthropomorphism is a human tendency to interpret existing physical features or behaviors beyond what is directly observable (Salles et al., 2020). This tendency leads to attributing human emotions and mental states to non-human behavior (Airenti, 2015). As such, anthropomorphic framings can be explained by the fact that algorithmic management is seen as challenging to grasp for those affected by it but also for those who study it. Put differently, although anthropomorphism is a phenomenon that researchers of algorithmic management may study, they as researchers may anthropomorphize algorithms themselves as they conceptualize them. Researchers of algorithmic management use anthropomorphist metaphors to describe the lack of understanding and the material agency seen in the use of HRM algorithms. For example, HRM algorithms are described as “a boss” (Adams-Prassl, 2019; Aloisi & De Stefano, 2022; De Stefano, 2020) or “a boss from hell” (Duggan et al., 2020, p. 120), which suggests that they are being viewed as having human-like authority and power. Furthermore, algorithms at work have been described as “erratic and bad-tempered” (Slee, 2017), which again highlights the tendency to see algorithms as having human-like behaviors and attitudes. Algorithms in HRM have also been referred to as “faceless” (Walker et al., 2021), further emphasizing the idea that algorithms are contrasted with human actors in HRM and thus are a distinct entity that exists “out there” and have material agency. Further, Lehdonvirta (2018) uses the “tyranny of the app” to explain how the older metaphor of “the

tyranny of the clock” has been replaced by new ways of organizational control. Reflecting on these metaphors is important, as they point to the assumed authoritative agency of algorithms in algorithmic HRM systems, which also resides in the reasoning that HRM algorithms take over HRM practices traditionally performed by line or middle management. For example, Lee (2018) writes that “algorithms increasingly make managerial decisions that people used to make” (p. 1), which suggests that algorithms are taking over human roles and thus have material agency. Such reasonings show how “the algorithm” is seen as an entity that is not easy to observe, yet its features and corresponding “behaviors” (or material agency) are “real” and can be interpreted by both interactors and researchers. As such, anthropomorphist explanations and metaphors can further reinforce the assumption that algorithmic management is a non-human entity with human-like capacities to act.

### 3.2 | Overcoming the blind spots of algorithms as “being out there” and avenues for future research

In the previous section, we identified a set of intertwined assumptions about the ontology of HRM algorithms as non-human entities that act independently, apart from human intervention, and are assumed to be “out there” in the world of work. The assumption that algorithms are “out there” surfaces in the literature mostly as scholarly work approaches HRM algorithms as technological/non-human entities with material agency. The centrality of this material agency in the current view on algorithmic management was explained as an understandable outcome of the prevailing assumptions and theoretical backdrop of the field. However, it also creates certain blind spots, shifting our attention to specific research foci and questions while overshadowing others. In what follows, we explain these blind spots and suggest ways of overcoming them.

The first blind spot caused by an ontology of algorithms as “out there” is the tendency to underestimate the role of humans as active agents in algorithmic management. This blind spot is a direct consequence of the overestimated centrality of algorithms in algorithmic management (studies) and leads to the underrepresentation of humans as active shapers of algorithmic management. The role of human agency has been dimmed through the strong assumptions on the material agency of HRM algorithms in algorithmic management studies.

The role of human agency in relation to technologies for HRM purposes (or electronic HRM; Bondarouk et al., 2017) has been conceptualized in earlier work (Bondarouk, 2011; Kim et al., 2021; Orlikowski & Iacono, 2001) and has different roles in ontologies of HRM technologies. Although the paradigmatic assumptions in the algorithmic management literature have caused an overestimation of algorithms as a blind spot, this is not to say that human agency is wholly ignored in current algorithmic management studies. However, in reflecting on the role of human agency in current algorithmic management research, its multidimensional nature can be unpacked further. Indeed, studies have, for instance, reported on worker



resistance in contexts with HRM algorithms (Cini, 2023; Maffie, 2022). For example, studies based on labor process theory understand workers/humans ultimately as agents that can resist algorithm control and its impact (Kellogg et al., 2020). Hereby, labor process theory does acknowledge a role for human agency (i.e., in the form of resistance) but only as a responsive or resistant force to material agency (i.e., in the form of control). Likewise, the studies based on J-DR model thinking help evaluate the outcomes of algorithmic management for and on workers, thereby analyzing how algorithmic management impacts workers through its material agency. However, they overlook the role of humans as active agents that can shape algorithmic management (Meijerink & Bondarouk, 2023).

Relating this to earlier work on ontologies of HRM technologies, the current literature on algorithmic management is mainly built on what Bondarouk (2011) presents as the linear approach to eHRM implementation and Kim et al. (2021) as a “tool view” on technology and, in which “technology is equated with a stable and determined set of equipment, procedures, and techniques that are purposefully designed to serve the benefit of its owner” (p. 233). In such a view, the HRM algorithm is treated as a stable (or “fixed”) technological entity used by an organization and is readily available as the core subject of academic studies.

In response to this underrepresentation of humans as active agents in algorithmic management, we suggest that algorithmic management research can benefit from adopting a dynamic approach to studying HRM and technology implementation (Bondarouk, 2011) and advancing what Kim et al. (2021) refer to as a “proxy view” on HRM technology, in which “technological artifacts are seen as largely stable entities, but it highlights the importance of users in the adoption and implementation of technological artifacts,” or an “ensemble view” on technology, which “recognizes the importance of social contexts within which technological artifacts are formulated, enacted, interpreted, and appropriated” (pp. 233–234) and in which technology is inseparably linked to the human agency of developers and users (p. 234). As such, the proxy and ensemble view on (HRM) technology can help bring in humans as active agents that can shape algorithmic management.

We realize that we are not the first to suggest this. The ensemble view and dynamic study approach of technology highlight the complexity of embedded technologies in the workplace and match the technology conceptualizations in socio-technical system theories (Leonardi, 2011). From similar angles, Bucher et al. (2021) offer a socio-material account of algorithmic management in online labor platforms, and Jarrahi et al. (2021) opt for a socio-technical approach to studying algorithmic management. Another example is offered by Anicich (2022), who developed a model on the socio-technical context of app-work, specifying how technological and social constraints and opportunities affect the identity dynamics of app workers. However, although a socio-material perspective can help to bring in human agency, algorithmic management research most often puts material agency at the front. Leonardi (2011) addresses how, in socio-technical accounts, the tendency is to understand human agency as something that is impacted by material agency. This approach remains dominant

in the algorithmic management literature, too. For example, it can be seen in accounts that highlight workers “resistance” to algorithmic control by which workers are understood as responding to an algorithmic (material) agency (Cameron & Rahman, 2022). It can also be seen in accounts that argue workers “comply” with (assumed) algorithmic mechanisms (Bucher et al., 2021). Along similar lines, Joyce and Stuart (2021) argue that the strong focus on control in labor process theory-inspired algorithmic management work leads to an undervaluation of worker resistance. Such an approach considers human agency in technology relations but still places material agency at the center.

To make up for this, Jarrahi and Sutherland (2019) take a first step in stating that workers are “not passive recipients of algorithmic management.” Further, Meijerink and Bondarouk (2023) illustrate how the active role of workers shapes material agency in their study on the duality of algorithmic management. In a recent contribution to the debate on regulating HRM algorithms, Adams-Prassl et al. (2023) suggested a holistic framework to restore human agency in algorithmic management by extending the human-in-the-loop idea to keeping humans in, before, after, and above-the-loop. Such accounts show the need to study the proactive role of workers in algorithmic management. Likewise, the role of designers as active agents should not be overlooked. As Jarrahi et al. (2020) contend, seeing HRM algorithms as independent entities with their own morality rather than understanding them through the process of interactions between them and various stakeholders results in an undesirable shift of responsibility for the effects caused by designers to the algorithms themselves. Importantly, scholars such as Jarrahi et al. (2020) show how HRM algorithms are not “out there in the world” as existing entities and instead are entities that can be responsibly shaped (through the active involvement of designers) and interacted with (through the active involvement of workers and other users). With this, Jarrahi et al. (2020) advance an ensemble view (Kim et al., 2021) and dynamic perspective (Bondarouk, 2011) on HRM algorithms by understanding algorithmic management as a process or a development project. Doing so allows them to bring back the human agency and nuances that can help overcome the discussed blind spots.

The second blind spot is the underrepresentation of data as a necessary input for HRM algorithms to function due to the common centrality of “the algorithm.” The underrepresentation of “data” as a core theme or central topic in the algorithmic management literature is striking. As described in our section on the conceptualization of algorithmic management, we identified three main characteristics in the definitions of algorithmic management, namely (1) the use of digital data, which (2) are processed through software algorithms for (3) augmenting and/or automating HRM-related decision-making (Meijerink et al., 2021). Hence, surprisingly, whereas data are mentioned as necessary inputs for HRM algorithms to function, they remain underrepresented as a central theme in algorithmic management scholarship.

As a result of the common centrality of algorithms as the technological center of algorithmic management studies, we found two main sets of assumptions linked to central elements of algorithmic

management: an ontology of “algorithms” and an ontology of the “management” they afford. However, here, we want to stress the absence of a strong “ontology of data” among current studies. Given the identified assumptions, this can indeed be linked to the “opaqueness” of HRM algorithms, as the abstract and opaque character of “data” could make them hard to include in studies. Interestingly, some forms of opaqueness are linked to the untransparent use of data in algorithmic decision-making. Still, with a strong focus on the decisions and results of algorithmic management systems, what data are and how they come about has gotten too little attention in algorithmic management research.

The absence of an explicit ontology of data is also explained by the underrepresented role of humans as shapers of algorithmic management. Just as data are a necessary input for HRM algorithms to function, human involvement is needed for “data” to exist. The practice of generating, gathering, structuring, and selecting data is a human process in which values shape the outcomes of HRM algorithms. Like algorithms, data are not “pre-fixed” entities but are constantly shaped by human agency. Including a consciously shaped “ontology of data” in algorithmic management, scholarship will unavoidably lead to including human agency in future studies, and vice versa. Once studies start to address more consistently the human involvement in the inputs of algorithmic management as a development project or as an interactional system (i.e., forms of the ensemble view on technology), data as a critical element of algorithmic management will come to the surface. An approach in which humans are understood as shapers and (co)designers of HRM algorithms and the data used as input, thus naturally asks to move away from the underlying assumptions that have so far helped to build and shape the field. Below, we share various ways in which future research can help overcome the explained blind spots.

First, the blind spot of overlooking humans as (pro-)active agents can be overcome by stopping to echo the black box message. In focusing on opacity lies the risk of algorithmic management scholars keep gazing at algorithms as incomprehensible black boxes. This lack of understanding can reinforce the belief that algorithms are non-understandable, which eventually comes at the expense of knowledge development. Put differently, the black box metaphor implies that opening up the design process is impossible and reshapes our expectations and responsibilities. As such, to overcome this blind spot, it is worthwhile to reflect on how to overcome this (perceived) opacity. In their review, Cheng and Hackett (2021) argue that the “black box” label is only right for HRM algorithms to a limited extent. The authors stress that algorithmic opacity only applies when the necessary technical knowledge to understand the inner workings of HRM algorithms is lacking. This means that while the opaqueness of HRM algorithms might indeed be the case for workers or other end-users, for scholars, it might be a combination of a (lack of) available information and a (lack of) technical understanding. As such, to take algorithmic management scholarship one step further, broadening the interdisciplinarity of algorithmic management research by cooperating with computer scientists and adjacent disciplines could help to move

beyond “opening up black boxes” towards understanding and changing how HRM algorithms function (Cameron et al., 2023).

Moving one layer deeper, it is a question of whether we should focus so much on the black box itself (e.g., if there is organizational opacity, technical opacity, or knowledge opacity) or whether it is better to uncover what values and data are being inscribed into algorithmic management. The fact that studies on the values and data used as input for HRM algorithms are underrepresented in HRM scholarship can be explained by looking at the identified assumptions. As was explained before, by overestimating the HRM algorithms (i.e., in terms of their power to control workers or to augment and automate HRM practices) and focusing on their outputs, another blind spot is that we forget to study the algorithm's inputs, in terms of data and values. Many studies into the outcomes of algorithms have led to rich insights into worker precarity or work circumstances. However, focusing too much on the algorithms and their agency, as well as their outcomes leaves possible insights from studying the design (which includes the data that is inputted and the values and beliefs that designers inscribe/program into HRM algorithms) of algorithmic management to be overlooked. In overcoming these issues, researchers should move away from merely criticizing HRM algorithms for the results obtained, as it would be more appropriate to include questioning the values and beliefs embedded by the developers in the design phase of the algorithmic system. Changing this focus to studies into the HRM algorithms inputs can be highly valuable (i.e., extending the ontological question of what HRM algorithms are, into how they become). For example, studies can draw on algorithmic audit research as developed in adjacent fields (Bandy, 2021; Gal et al., 2020),<sup>2</sup> which helps reveal organizational inputs, priorities, and values embedded in algorithms. Such approaches can be beneficial even in contexts where researchers cannot access “the algorithm,” which is often signaled for companies engaging in algorithmic management (Benlian et al., 2022) and can be experienced as a “hustle” and demand a lot from the researcher (Collett, 2023). Techniques that broaden the focus of algorithmic studies help to study algorithmic management from a proxy or ensemble view without being hindered by the assumption that the technology under study is “black-boxed.” Moreover, it leads the way in identifying a stronger “ontology of data” for algorithmic management studies.

To overcome the blind spot of material agency, scholarly work should move away from blurred human and algorithmic characteristics and help to nuance the debate on HRM algorithms. Studying HRM algorithms as part of an ensemble, among human actors, values, and data, also helps to separate human and algorithmic characteristics and hence helps to answer anthropomorphist framings that trouble nuanced understandings of how HRM algorithms actually function. As said, reporting on anthropomorphist understandings of workers may be helpful, yet reinforcing the current anthropomorphic framing of HRM algorithms in the literature, studies can lead to the overestimation or flawed interpretation of algorithmic management, which can arguably become increasingly tricky with more human-like automated HRM systems. Despite the centrality of “algorithms” in the

algorithmic management literature, algorithmic management research is, for the vast majority, non-algorithmic. Many studies do not give an account of the actual algorithms under study, for example, by including names, versions, or prototypes. As said, misinterpreting the agency of HRM algorithms can reshape our expectations and responsibilities. Instead, embracing the fact that HRM algorithms are part of an ensemble and, paying attention to the technological affordances of specific HRM algorithms, help to see the ontological differences between algorithms and human actors (Salles et al., 2020).

The final way the dominant assumption of HRM algorithms as agentic actors that exist “out there” hinders new ways of understanding and studying algorithmic management is closely connected with the previous point. It concerns the social scientist's approach to studying and interacting with HRM algorithms. Although existing studies into algorithmic management have offered many insights, the “social scientist approach” to studying algorithms in retrospect, indirectly, or conceptually (e.g., compared with engineering science) creates certain blind spots, too. We see several ways for HRM scholars and other social scientists alike to overcome these blind spots and move to the next step of algorithmic management research:

To move towards a new way of understanding HRM algorithms, social scientists can engage in more action-driven, design-oriented, or engineering approaches to studying algorithmic management. Such approaches involve actively engaging with a phenomenon and trying to change it or observe the design to observe the effects. Taking a more active, design-oriented approach goes hand in hand with letting go of the view that algorithms are fixed entities that are “out there in the world.” First, by taking an intervention or engineering approach, changing the algorithms under scrutiny (as opposed to observing the algorithms' effects) moves away from current methodologies and creates new opportunities for knowledge development. In fact, such design-oriented approaches can help to move away from an ontological view of HRM algorithms as “being out there” to seeing “how they become.” This again resonates with an ensemble view of technology, which pays attention to the developmental character of technologies (Kim et al., 2021). Such studies can zoom in on, for example, what values prevail in HRM algorithms and through which processes of power values get inscribed in algorithmic management. How does the design process unfold? What are the actors in this process, and what power do they have? How are such practices constantly (re)shaped? Approaches to answering such research questions can involve, among many other foci, co-creating HRM algorithms with software developers, studying the design process of HRM algorithms, or studying the process through which the data for HRM algorithms is prepared. An exemplary study that uses co-creation with workers to challenge current knowledge about and practices of algorithmic management was conducted by Calacci and Pentland (2022). By co-designing a worker-centric tool, they produced knowledge on the design phase of worker technologies and challenged the black-boxed status of the algorithmic management system at hand in the same study. This shows how intervening in developing or applying algorithms in the HRM context helps gaining a different understanding of their mechanisms and implications. In other words, taking different

epistemological avenues (i.e., through which roads can we get an understanding of HRM algorithms?) can help to build novel insights on HRM algorithms. Here, algorithmic management scholars can take an interest in neighboring fields such as data science and information systems studies, where the identified blind spots, such as data and the role of humans as active shapers of algorithms, have a more central role as a specific research theme.

Moreover, algorithmic management researchers can build on an extensive debate on how algorithms are best studied. Some scholars have called for ethnographic accounts of algorithms and offer interesting insights on how to approach these (Bailey & Barley, 2020; Marda & Narayan, 2021). Such accounts can be useful to overcome the identified blind spots for current algorithmic management scholarship. For instance, Christin (2020) showcases how an ethnographic algorithm study can help to overcome the black box message.<sup>3</sup> Further, Seaver (2017) also highlights the ethnographic method as a way of overcoming the black box idea but moreover presents critical ideas on the overestimation of “algorithms” in algorithmic studies and offers strategies and ideas on how to access contexts with algorithmic systems in place. A last example is given by Dekker et al. (2022) in the context of managing refugee camps, where their study on co-designing algorithms shows how human agency, including knowledge from the field, shaped the algorithm. The study simultaneously emphasizes the importance of data throughout the design of algorithms. We deem these approaches highly valuable for the future of algorithmic management studies and highly inspiring, reflecting on the “ontology of data” and its importance for our understanding of the use and design of HRM algorithms.

### 3.3 | The “ontology of management” as an economist instrument

Besides the assumptions related to the ontology of algorithms (i.e., algorithms as fixed non-human entities with material agency that exist “out there”), we also identify a set of assumptions related to the “ontology of management” that HRM algorithms afford. Specifically, we identify a set of assumptions underlying algorithmic management research that signal that algorithms in the workplace serve as an economic instrument for profit and, thus, shareholder value maximization or economic wealth creation.<sup>4</sup> This “economist” perspective on algorithmic management surfaces throughout the literature in studies with varying theoretical backdrops. For instance, seen through a labor process theory lens, Kellogg et al. (2020) argue that HRM algorithms serve to control workers to maximize the surplus value of their labor. Algorithmic management research that the JD-R model informs reinforces similar assumptions, albeit in a different way, by arguing that HRM algorithms offer job resources that allow employees to increase their job performance (Parent-Rocheleau & Parker, 2022). Through the maximization of labor efforts (labor process theory) and job performance (JD-R model), shareholder value is seen to be created, thereby situating HRM algorithms in a socio-economic context.



Combined with the assumption that HRM algorithms have material agency (i.e., the ontology of algorithms we identified earlier), this highlights that the algorithmic management literature thinks of HRM algorithms as—what we refer to as—“algo economicus.” The notion of “algo economicus” ties in with that of “homo economicus,” that is, the human being as an amoral, individual utility maximizer that only engages with others in transactions to fulfill their personal economic interests (Pirson, 2019). The paradigmatic perspective of “algo economicus” echoes that of homo economicus in that it assumes that HRM algorithms are non-human entities with the capacity to maximize utility and profit. In what follows, we provide several examples of how this economist view on algorithmic management as “algo economicus” prevails in the algorithmic management literature.

The first example of an ontology of algorithmic management as an economist instrument (or a view of HRM algorithms as “algo economicus”) is the research idea that HRM algorithms are ultimately an instrument for managerial control (Cram et al., 2022; Duggan et al., 2020; Möhlmann et al., 2021). According to the assumption that management is all about control rather than trust, the focus is on exerting control over workers rather than building trust and fostering collaboration (Schafheitle et al., 2020). This view is exemplified by the work of Kellogg et al. (2020), which emphasizes the importance of control in management with a notion of the contested terrain of control. There are several signs in the literature that show how a control-focused vision on HRM has informed both studies that directly deal with control issues, as well as studies that focus on other research themes.

The assumed connection between HRM and control also comes to the surface in definitions of algorithmic management. For example, algorithmic management is defined as “a system of control where [...] algorithms are given the responsibility for making and executing decisions affecting labor, thereby limiting human involvement and oversight of the labor process” (Duggan et al., 2020, p. 6). The rich body of literature focusing on control-related issues in algorithmic management also shows the connection between HRM and control. For example, several studies adopt a Foucauldian lens to theories about the normative control mechanisms that algorithmic management affords. A key metaphor in the algorithmic management literature stemming from this line of reasoning is the panopticon (M. Cheng & Foley, 2019; Duggan et al., 2020; Veen et al., 2020; Walker et al., 2021; Woodcock, 2020).

The focus on organizational control through algorithmic management also resonates with the rationale that the emergence of technologies can be seen as new forms of Fordism and Taylorism (Faraj et al., 2018; Goods et al., 2019; Joyce & Stuart, 2021; Noponen et al., 2023; Wood et al., 2019). For example, Goods et al. (2019) speak of the new ways of organizational control as “Hyper Taylorist” that aim to maximize efficiency and, thus, profit. Overall, this approach to management is characterized by a lack of trust in workers and a focus on keeping control over their activities.

The economist view on algorithmic management resonates clearly with the strong focus that has been put on control. Yet even if we go beyond notions of algorithmic control, the economist paradigm

prevails in current algorithmic management studies. There are indeed studies criticizing labor process theorist thought in arguing against a technological determinist idea of HRM algorithms as merely controlling workers or merely coming at the expense of workers' interests. For example, Meijerink and Bondarouk (2023) show in their study how HRM algorithms can enable and restrain worker autonomy. However, although this study moves beyond the assumptions of labor process theory, it is still focused on value/wealth creation, which means that it is still rooted in an economist paradigm.

The strong narrative of control and an economist paradigm, as presented by the many metaphors found in the algorithmic management literature, is explainable by the fact that the research stream found its roots in the context of the gig economy. In the initial stages of algorithmic management research, many studies focused on cases from the gig economy, where algorithmic management techniques were developed and intensely put to use. This has led to an omnipresence of platform studies in the algorithmic management literature (Jarrahi et al., 2020). The Uber platform and its algorithmic management techniques have developed into an emblematic example over the years for outlining algorithmic control of workers. Uber is often used as a case study for empirical and conceptual work on algorithmic management. For instance, Rosenblat and Stark's (2016) article describing the work experience of Uber drivers is considered one of the seminal articles in this literature precisely because it was one of the first to focus on the consequences of algorithms on workers. This has led many studies to concentrate on algorithmic outcomes and take Uber's mechanisms as a golden standard for all organizations working with algorithms. Scholars such as Gal et al. (2020) and Walker et al. (2021) have used Uber as an example in their studies on algorithmic management, and Galière (2020) highlights how algorithmic control research started with a focus on the “emblematic case of Uber.” The focus on Uber has become so strong and compelling that it resulted in the term “Uberisation,” which sets Uber as an example for further developing algorithmic management and Uber-like modes of controlling workers (Faraj & Pachidi, 2021).

The focus on Uber as a paradigmatic case helps to tell a compelling story about the new modes of organizational control and worker outcomes (Walker et al., 2021). It is through this narrative that Uber and other online labor platforms like Deliveroo are seen as an extreme form of capitalism where the creation of shareholder value is a key driver for the adoption of algorithmic management (Birch & Cochrane, 2022; Van Doorn & Badger, 2020).

Although the omnipresence of platform studies in the scholarly debate on algorithmic management is logical, it has shaped the assumption that algorithmic management techniques are ultimately economist instruments. This is because cases like that of Uber, as the poster child of shareholder value maximization, represent an extreme case of not only algorithmic control but also economism. Hence, as a result of this root metaphor, the paradigmatic view on algorithmic management has become one of economist thinking, which has extended to studies in different contexts and based on various theoretical backdrops.

### 3.4 | Overcoming the blind spots of management as “an economic instrument” and avenues for future research

The assumptions outlined above on algorithmic management being an economist instrument cause certain blind spots, shifting our attention to specific research foci and questions while overshadowing others. As the discussion above shows, the prevailing paradigm in algorithmic management research tends to be economist. As a result, the overarching blind spot for algorithmic management researchers is to overlook alternative paradigms for understanding and studying algorithmic management. Here, we specifically call for research that builds on alternative ontological and ideological assumptions about what management is or should be about. In this section, we explain how this blind spot currently manifests and provide ways of overcoming it, paving the road for new ways of algorithmic management research.

The notion of algorithmic control has been a central theme since the emergence of algorithmic management scholarship. As explained before, this centrality is understandable, given the emergence of algorithmic management research within the platform setting and the theoretical frameworks adopted to highlight control issues. Although focusing on control issues has led to many valuable insights on how current ways of controlling workers can come at the expense of workers' interest (i.e., exploitation and datafication), viewing managerial practices from an inherently control-oriented perspective has limits. That is, it leads researchers to overlook the fact that HRM can be used for different purposes than just control and be based on different HRM philosophies, that is, a statement of how an organization regards its personnel and how workers should be treated (Lepak et al., 2006; Schuler, 1992). In fact, in the past decade, HRM research has shifted away from examining high-control HRM practices towards those that foster worker commitment (i.e., high-commitment HRM) and involvement (i.e., high-involvement HRM) (Boon et al., 2019). Although initial work on the controlling mechanisms of algorithmic management has led to rich contributions to the field, for future research, it would be more fruitful to follow the same path that general HRM research took by examining other forms of algorithmic management that are not control-driven and based on alternative HRM philosophies (e.g., so-called high-road HRM activities). Focusing on control means overlooking other forms of management systems, such as high-commitment and high-involvement, but it also means overlooking other existing forms of organizations, such as cooperatives, in which managerial control is not assumed to be an essential characteristic (Bunders et al., 2022). While remaining in debates about organizational control and technological developments, one can get easily stuck in debating whether it is new wine in old bottles (new forms of Fordism and Taylorism) or a completely new way of organizational control. Instead, we suggest looking at alternative mechanisms, such as cooperativism and trust, and alternative organizational forms, such as platform cooperatives (Bunders et al., 2022). This is essential to overcome the identified blind spots, as different organizational forms have different mechanisms, labor relations, and ways of implementing algorithms (Jarrahi et al., 2020) and, as such, can provide

insights on algorithmic management beyond the economist way of thinking. For example, by repeatedly studying algorithmic management in labor platforms that do not grant access to (the design and inputs of) their algorithmic systems, the idea that algorithmic management works as a black box that only serves the organization (i.e., underlining the identified assumptions and resonating a “tool view” on technology) may prevail. On the contrary, in working with organizations with cooperative and collaborative characters that are also willing to share their design process and data inputs, researchers can start to explore the richness of algorithmic inputs and the landscape of values that can inform algorithmic management beyond the economist ones (i.e., adopting an ensemble view on technology by focusing on the processes, development of algorithmic systems, and human agency).

Focusing on different forms of management and alternative organizational forms also means reconsidering the “go-to” examples for algorithmic management practices, such as Uber, Deliveroo, or DoorDash. Uber is utilized as the paradigmatic example throughout algorithmic management literature. However, the use of Uber and Uberisation as key terms in the algorithmic management debate also substantially limits the debate. For example, in line with the argument that it is time to study algorithmic management beyond the platform economy, Jarrahi et al. (2020) opt for a distinction between platformic management and algorithmic management. Algorithmic management also appears increasingly often in more traditional work settings outside the platform economy (Benlian et al., 2022; Bujold et al., 2022; Jarrahi et al., 2020). Using Uber as a key example here might undermine the differences to be found between platformic and non-platformic forms of algorithmic management. Although the platform has been a serving example to criticize certain algorithmic management practices in the platform economy, it is not a fitting lens to address the plurality of algorithmic management in every form, context, time, and space.<sup>5</sup> As with every lens, paradigmatic examples help to highlight specific manifestations of a phenomenon (i.e., control, Uberisation) but make that other elements remain unseen (e.g., trust, cooperativism). In turn, future studies can also benefit from reconsidering theoretical frameworks to work towards a new paradigm. The theoretical frameworks that were initially adopted to study algorithmic management in the platform economy might be less fitting for studies of algorithmic management in new contexts (i.e., letting go of the focus on control). Further, by keeping the focus on existing platforms like Uber that are known for their economist approach, researchers limit opportunities of studying platforms and organizations that (want to) operate HRM algorithms for reinforcing a different paradigmatic ideology. Lastly, from an ideological standpoint, an important consideration emerges: in determining where to direct our research efforts, should we allocate more time to studying platforms like Uber, potentially amplifying their practices, or should our focus be directed towards other (socially or sustainably driven) organizations that might be more in need of scrutiny and analysis?

The assumptions on management as an economist paradigm have led to difficulties seeing alternative ways of framing, understanding, and studying (algorithmic) management. New avenues for algorithmic

management research could be paved by embracing alternative paradigms from which (algorithmic) management can be understood, studied, and even co-created. Algorithmic management is often associated with a techno-centric and instrumental view of management based on control and the homo economicus, which prioritizes efficiency and productivity over intrinsic human values. To overcome the blind spots of control-focused economist research, scholars can find grounds in differently embedded management paradigms, such as humanistic management (Pirson & Lawrence, 2010). Humanistic management emphasizes management's ethical and social dimensions and prioritizes human well-being and flourishing (Pirson & Lawrence, 2010). Scholars of humanistic management argue to move from a materialistic to a humanistic form of labor, supporting the case to move beyond the “algo economicus” (Dierksmeier, 2010). Working in a humanistic paradigm requires putting inherent values instead of instrumental ones at center stage. As such, adopting an ensemble view on HRM algorithms fits a humanistic paradigm, as humans and values are an integrated part of algorithmic management. Embracing a humanistic paradigm in understanding and studying (algorithmic) management means letting go of the idea of homo economicus, and reshaping our ideas on how, where, and why to study algorithmic management. When the suggestions to overcome economism are combined with those to overcome the view on HRM algorithms that emphasizes their material agency, the possibilities for new algorithmic management research fire up.

## 4 | CONCLUSION

Over the last decade, many academic studies have examined algorithmic management. Through a conceptual refinement of the term and advancement of theoretical perspectives, the literature has made significant progress in conceptualizing algorithmic management and its outcomes (for workers). Against this backdrop, we identified, described, and critically reflected upon some of the core assumptions in the algorithmic management literature. Our study shows how these assumptions relate to the “ontology of algorithms” and the “ontology of management” (that is afforded by HRM algorithms). Together, these drive a prevailing discourse on “algo economicus” in the algorithmic management literature, which affords to think of HRM algorithms as more or less independent entities that meet the rational aims of economic growth and welfare creation. Although these prevailing assumptions helped advance the algorithmic management literature and bring about essential insights, they also created “blind spots” that hamper thinking about HRM algorithms in new ways. We identified two sets of blind spots and, in doing so, called for more research into human agency as well as a humanistic perspective on algorithmic management. At the intersection of these two new research lines, the most significant potential lies, for instance, when algorithmic management scholars contribute to the study and co-creation of HRM algorithms for fostering well-being at work. Accordingly, we hope that our reflective study of the assumptions of algorithmic management literature provides fertile ground for new research into HRM algorithms.

## ACKNOWLEDGMENTS

We thank the members of the HRM Research Group at the University of Twente and the participants of the workshop “AI and emerging technologies: Beyond the hype” (Rome, May 2023) for their valuable comments on early versions of our manuscript. We particularly acknowledge the insightful feedback from the anonymous reviewers and Kate Kellogg, Jannis Kallinikos, and Mieke Boon. Thank you for helping us advance our work. Our study is part of the research project “Working with Robots-as-Managers,” co-financed by the School of Behavioural, Management and Social Sciences of the University of Twente and the Netherlands Organisation for Applied Scientific Research (TNO).

## CONFLICT OF INTEREST STATEMENT

None of the authors have a conflict of interest.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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## ENDNOTES

- <sup>1</sup> We recognize that paradigmatic assumptions are of ontological, epistemological, and methodological nature. Ontological assumptions prompt us to inquire into the essence and nature of HRM algorithms. Epistemological assumptions delve into how knowledge about HRM algorithms can be attained. Methodological assumptions guide the selection of approaches best suited to investigate this phenomenon. This paper primarily addresses ontological assumptions, aiming to catalyze new perspectives and approaches in understanding HRM algorithms. By initiating discourse on ontological assumptions, we hope to promote debates concerning epistemological and methodological approaches. Our exploration within the paper also hints at innovative epistemological and methodological pathways, meant to challenge the existing paradigm and propel advancements in the field.
- <sup>2</sup> We want to thank the anonymous reviewer for suggesting literature on algorithmic audit as a way to bring organizational values and (data) inputs to the surface.
- <sup>3</sup> We thank the anonymous reviewer for suggesting additional literature on ethnographic algorithm studies.
- <sup>4</sup> It's noteworthy that our examination reveals a notable duality: HRM algorithms are portrayed with substantial material agency while concurrently serving as a management instrument. While this apparent contradiction is intriguing, our paper does not aim to delve into its complexities or resolve this dichotomy. Rather, our focus remains on exploring the landscape of algorithmic management scholarship.
- <sup>5</sup> While acknowledging the applicability of the “algo economicus” lens to certain practices, it is pertinent to note that this discussion remains outside the scope of this paper. The underlying assumptions inherent in our research methodologies delineate the boundaries of our inquiry, emphasizing particular phenomena while omitting others, thereby potentially reinforcing specific practices. However, it is imperative to clarify that this paper abstains from an in-depth exploration of these practices themselves, instead centering its attention on the domain of algorithmic management scholarship.

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**How to cite this article:** Lamers, L., Meijerink, J., & Rettagliata, G. (2024). Blinded by “algo economicus”: Reflecting on the assumptions of algorithmic management research to move forward. *Human Resource Management*, 1–14. <https://doi.org/10.1002/hrm.22204>