

The Algorithmic Management: Reflecting on the Practices of Airbnb

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The aim of this chapter is to provide insights into the future development of HRM in the post pandemic tourism contexts, focusing on the concept of algorithmic management. The chapter explores how algorithms are used in performance monitoring and rewards in the case of Airbnb and the implications of this for its hosts. This is used as a basis to reflect on the trend towards quantifying human performance and the issues that management by algorithms and platform work raise. The research uses qualitative discourse analysis as its methodological approach. Textual, photographic and video material from Airbnb homepages and documents are examined. We analyse the Airbnb algorithmic management from the perspective of the classical HRM functions and identify the defining features of Airbnb algorithmic management. Our discussion considers the future directions of algorithmic management whereby we postulate that algorithmic management will become further embedded in the operations of traditional hospitality and services industries, beyond the current digital platform work.

Keywords:

Algorithmic Management, Airbnb, Performance and Rewards

Acknowledgments

This research was supported by the Slovenian Research and Innovation Agency (ARIS) and carried out within the framework of the project The future of social dialogue in the platform economy: The case of Slovenia J5-4586.

Introduction

The aim of this chapter is to provide insights into the future development of human resources management (HRM) in the post pandemic tourism contexts, focusing on the technological developments in human resources management broadly understood under the concept of algorithmic management. The chapter explores how algorithms are used in performance monitoring and rewards in the case of Airbnb and the implications of this for its hosts. This is used as a basis to reflect on the trend towards quantifying human performance and the issues that management by algorithms and platform work raise.

We argue here that algorithmic management is a continuation and an extension of the classical understanding of human resource management (HRM). While the HRM in the traditional service economy is focused on organisations and physical presence of the management, the platform economy means web-based, platform mediated work. Significantly, platform workers are largely detached from organisational structures, apart from through the mediating platform. This raises questions around how those vital aspects of HRM occur and are transformed by this situation whereby the platform represents the human resources manager.

When discussing the historic role of technological innovation in the tourism contexts the most important focal points are not so much the technological improvements per se, but rather the business model innovations that often follow economic crises and fuel the way the technologies are used and developed. To illustrate, after the “dot.com bubble burst” in 2000 what followed in the next decade was the growth and eventual consolidation of the global tourism duopoly of the two largest conglomerates, both set up before the crisis in the same year 1996 – Booking Holdings versus Expedia Group. The two giants have risen from the ashes of the then “dot.com bubble” crisis by being able to harness the technological transformation of the global society.

Only 8 years later in 2008, the global financial crisis caused major disruption and extreme job losses across the globe. This was the fertile ground for the development of the “sharing economy” business models which eventually grew into the “platform economy” as we know it today, giving rise to the giants such as Airbnb – the first global player that after more than a decade managed to disrupt the global duopoly of the two above mentioned giants. Building on the ethos of the sharing economy, such as the example of Couchsurfing, Airbnb was able to harness not only technological innovation but much more so the societal acceptance of “sharing ideology”. This was not coincidentally described by one of his founders in the TED (Gebbia 2016) as “discovering it was possible to make friends while also making rent”. What followed was the rise of the platform economy and the new business models of platform work and algorithmic management.

Eleven years later, the global pandemic crisis occurred, and it remains to be seen what conclusions we will be able to draw in the future. What we argue here is that similar as to the two crises before, the global pandemic crisis will not cause technological development, but rather accelerate the initiatives which started before the crises, especially the use of algorithms in human resource management (HRM). Set against this background, our paper seeks to explore algorithmic management as the next important step in future development of HRM. More specifically, we explore this question in the case of Airbnb and the implications for HRM conceptualisations in the futures of tourism.

Literature review

Current theoretical debate revolves around the distinctions of algorithmic management versus traditional human resource management (HRM). Traditional research in human relations management typically defines HRM as a “strategic, integrated and coherent approach to the employment, development and well-being of the people working in organisations” (Armstrong and Taylor 2014). Algorithmic management on the other hand is the umbrella term used for the technological techniques and tools that are used to remotely manage the workforce (de Stefano 2017), and the use of computer-programmed procedures for the coordination of labour input in an organisation (Baiocco et al. 2022).

Lee et al. (2015) were the first to define algorithmic management as the use of algorithms to allocate, optimize and evaluate work, taking roles that human managers used to play. According to Kellogg et al. (2020) this includes: (a) algorithmic direction: automating the allocation of work tasks (defining what needs to be done, in what sequence and time frame and according to what instructions), (b) algorithmic evaluations (reviewing completed tasks to identify and rectify errors, assessing performance, and eliminating those not meeting work standards), and (c) algorithmic discipline: disciplining the workforce (imposing both positive and negative sanctions on employees).

A narrow understanding considers algorithmic management primarily as the replacement of the role of human leaders, where decisions are the result of the company's policy, i.e., the top management of organizations or platforms. A broader understanding of algorithmic management analyses the role of algorithms also in guiding the business decisions of top management. This stems mainly from the research on so-called business analytics systems, where algorithmic systems are defined as the algorithmic control, measurement, and management of business processes (Clark, Jones, and Armstrong 2007). This mainly concerns the replacement of analytical functions for both management and workers, where the use of algorithms ranges from mere data analysis to increasingly prescriptive instructions on how workers and management should act based on the results of the analysis (Bader and Kaiser 2019).

Algorithmic management receives research attention primarily from analysing its effects on workers and how workers navigate the systems (Lee et al. 2015; Rosenblat and Stark 2016; Jhaver et al. 2018; Cheng and Foley 2019; Lin et al., 2020; Wu et al. 2023). According to Wood et al., (2019) algorithmic control differs significantly from Taylorist control, often attributed to the extensive use of informational management tools. In contrast to Taylorism, Wood et al., (2019) claim that workers report algorithmic management techniques facilitate high levels of autonomy, task variety and complexity, as well as potential spatial and temporal flexibility. On the negative side, however, workers report low pay, social isolation, working unsocial and irregular hours, overwork, sleep deprivation and exhaustion. An interviewee stated: "I don't have anyone supervising me and yelling at you, 'you haven't done this and you haven't done that'" (Wood et al., 2019). The replacement of middle management, for workers primarily, means the elimination of negative human relationships and poor leadership.

On the other hand, it is important to note that algorithmic management does not exclude such negative relationships between workers and leaders; in fact, it may even exacerbate them. In these cases, middle management remains, but with more sophisticated control mechanisms. Algorithmic management thus paradoxically has a dual effect on the power and role of leaders in organizations: on the one hand, it increases their power with increasingly automated options for work control. On the other hand, it diminishes their leadership authority (Jarrahi et al., 2021). Additionally, McGuire et al. (2003) show that participants perceive the decision made in the algorithmic leader condition to be less fair, trustworthy, and legitimate, and this in turn produces lower acceptance rates of the decision and more negative perceptions of the organization's reputation.

Bader and Kaiser (2019) see algorithmic management as a trend of increasing autonomy of technology: no longer just something that humans manage but as an active agent with the power to change the environment, processes, and people. Wood (2021) distinguishes between

algorithmic management and algorithmic support based on the degree of automation drawing inspiration from the typology of self-driving cars. Algorithmic support merely entails automated assistance to managers: the decision-making remains entirely in the hands of managers who, at their discretion, continuously review, ignore, or override the automated system. Algorithmic management (conditional automation), on the other hand, performs these central functions automatically, with leaders (management) intervening in decisions only if the system itself alerts the need to do so. The extreme level of such automation would be if managers could no longer direct the algorithm or interfere with its decisions, even if they wanted to – a level that, according to Wood, we have not yet reached and likely won't for a long time, depending primarily on the development of artificial intelligence and the transfer of power to algorithms in the future.

Algorithmic management can describe systems of varying degrees of complexity, but it typically involves extensive data collection and the control of workers using technology, real-time responsiveness to data, automated or at least partially automated decision-making, the transfer of performance assessments into evaluation systems or other metrics, and the use of "nudges" and sanctions to indirectly encourage worker behavior (Mateescu and Nguyen 2019). While research has been done on these specific measures, the issues of broader functions of HRM in algorithmic management needs to be addressed holistically, specifically: how does algorithmic management address the traditional HRM functions: recruitment and selection, socialisation, training and development; and performance management and rewards?

Airbnb and algorithmic management

The focus of this research is on Airbnb as the largest "sharing economy" platform in the hospitality industry in the West. Founded in 2008, Airbnb is a "one of the world's largest marketplaces for unique, authentic places to stay and things to do, offering over 7 million accommodations and 50,000 handcrafted activities, all powered by local hosts" (Airbnb 2020a). After more than a decade of the global duopoly of Booking Holdings versus Expedia Group conglomerates, Airbnb was the first startup that managed to importantly disrupt this duopoly, not surprisingly attracting extreme levels of research focus in the past years.

Focusing on Airbnb, we have argued elsewhere (Turnšek and Ladkin, 2017) that travel-related platforms include three specific directions that are a result of previous historical development of technology and digital labour and play an important role in tectonic shifts in management of travel-related platform work. The first is the interconnection of platform design and use with social media characteristics in order to "build trust amongst strangers" (Guttentag 2019) (e.g. having personal profile photos, presenting past trips, personal hobbies and interests). The second is the use of technology for oversight of digital aspects of labour, thus increasing the importance of digital forms of hospitality (e.g. response time, number and quality of photos). The third is the importance of guests' ratings. And finally, all of this amounts into algorithmic positioning of the host on the webpage and thus indirectly representing the hosts' pay per performance operation.

Although Airbnb has been extensively researched, up to date its algorithmic management has not rendered much research focus. Cheng and Foley (2019) analysed discussions amongst Airbnb hosts and learned that they have many complaints about the lack of information, clarity and transparency available for them to navigate Airbnb algorithms. In many cases this led to a decrease in sense of control and an increase in anxiety for the hosts. Similar results were reported by Jhaver et al. (2018). Bucher et al. (2020) analysed how various platforms, Airbnb included, promoted emotional labour of their workers and identified two types of direction: (a) the design features, such as mutual ratings, reward systems, and gamification and (b) more subtle (soft) normative framing of desirable practices via platform and app guidelines, tips, community sites, or blogs. Von Richthofen and von Wangenheim (2021) analysed how Airbnb directs host in their service provision and identify three area of direction: (a) orienting is

providing orientation to service providers, e.g. exemplifying the desired customer experience mythologizing and valorizing expected behavior, (b) enabling is providing resources and support to service providers, e.g. sourcing and circulating best practices, orchestrating peer education and tool providing, and (c) incentivizing and controlling is exerting a directing influence over providers, e.g. online tracking and evaluation, peer control and formal control.

Reading of the extant literature around work in the platform economy and our reflection on the practices of platform economy lead us to propose a conceptual framework of HRM in the travel related platform economy, shown in image 1.

[Insert Image 1]

Image 1: Transitions between human and algorithmic management

The platform economy is part of larger social structures and provides changing structures of work with implications of how we manage human resources. Image 1 provides an indication of how this is operationalised. Rather than thinking about traditional “human” management versus algorithmic management as two opposite, discrete options, we see the two as the opposite poles of the same phenomenon – differentiating on the extent to which algorithms are included in the four traditional roles of HRM.

In order to explore the evidence for a new way of performing HRM in the platform economy, we present our conceptualisation around four key operational areas for HRM; recruitment and selection, socialisation, training and development; and performance management and rewards. These are singled out for reflection as core areas that feature repeatedly over time in discussions around HRM (see for example Baum, 2007; Kusluvan et al, 2010). Additionally, in what Baum (2006) terms “functional” textbooks on HRM in hospitality industry, these four areas are contained within the key functions that HRM needs to perform, thus representing the minimal common denominator of the topics covered in textbooks on HRM in hospitality and tourism industry (e.g. Nickson 2013; Boella & Goss-Turner 2013; Chesser 2016).

Methods and Data Collection

Qualitative discourse analysis was undertaken in order to ascertain the ways in which Airbnb monitors and reward its hosts. The essential difference of platform work in comparison to work in traditional organisations is its publicity. In traditional organisations, research necessarily depends on methods such as the extended case ethnographic method (Burawoy 1979) whereby the researcher needs to immerse in the organisation in order to acquire information on mechanisms of managerial control. Platforms, however, address their workers publicly thereby allowing for higher extent of public scrutiny and easier access to research data.

The study used Airbnb homepages and documents which could be hyperlinked to two depths from the Airbnb homepage site. The analysis included analysis of textual, photographic and video material which was copied and saved (with exception of videos) on the dates of the analysis during the early phase of the COVID-19 pandemic – March, April, and May 2020. The majority of this data was openly publicly accessible, but in cases where registration was needed in order to access the data, one of the researchers registered with her Airbnb account. Overall, approximately 500 written pages of text and photography and approximately 3 hours of video material were analysed.

A qualitative content analysis of the documents was undertaken, following the steps of analysis identified by Mayring (2014). Specifically, the material was processed and categories tentatively created and deduced step by step from the collected text (Mayring 2014). The analysis is overlapping with critical discourse analysis, since the overarching aim is to identify the presence and forms of combination of recurrent and relatively stable and durable 'discourses' in texts combined with detailed analysis of forms of argumentation and visual aspects of the text. Fairclough's methodological approach and epistemological application for organisational discourse studies (Fairclough 2005a; 2005b) were followed.

Findings and Discussion

Worker and Organisation

First, while in the traditional service economy the HRM is built around the notion of the worker as the employee, in the platform economy the situation of employment becomes blurred and the workers are considered to be self-employed. This might potentially mean that the workers themselves do not even recognise the role of the platform as the manager of their work, but might perceive the platform only as the service provider or the digital intermediate; providing them with the service of reaching out to more clients or guests. Second, in the traditional service economy the HRM is bound to the organisation's physical location with human managers performing the HRM functions. In the platform economy the organisation's existence is web based and virtual in the sense that is always mediated via the platform.

Recruitment and selection

Aligned with Baum (2006) we define recruitment and selection as a functional responsibility of the HRM designed as strategic process of attracting an effective workforce. In the service economy, the process includes approaches to screening and selectivity of candidates and matching candidates for both the work needed and the broader organisational strategy and climate. In the platform economy, however, this falls in area of marketing. A platform's core business model is the multi-sided platform where success depends on marketing to both sides – the hosts and the guests. According to Dolnicar (2017) having a sufficient pool of hosts and guests is both an existential necessity for a travel related platform in order for it to be able to function and serves as significant barrier to entry for competitors. Dolnicar (2017) claims that requiring a critical mass of participants to successfully run a platform business is neither conceptually new in terms of a business model, nor is it unique to the platforms such as Airbnb. Yet the dependence on both demand and supply as well as the fact that neither demand nor supply are in the control of peer-to-peer accommodation networks does distinguish them from the established commercial accommodation sector. Marketing is used to entice people to become hosts, for example Airbnb recruits hosts using slogans such as *'Earn money as an Airbnb host. From saving for home repairs to taking a dream trip, hosts use extra income to fund their passions'* (Airbnb, 2017 in Dolnicar 2017, 3). This means that the workers are addressed as customers of platform and that the first area of HRM functions – the recruitment and selection process – becomes primarily a marketing endeavour, with the focus on the recruitment concerned with gaining the highest possible number of well performing workers with good value for money for guests. Consequently, platforms do not necessarily perform a detailed selection of their workers at the entrée stage but need to look for ways to identify, reward and promote well performing workers at the later stages. Hence, we expect the growth of importance of later-stage performance management amongst the four functions.

Socialisation and employee training

By socialisation we term here a functional responsibility of the HRM to build an organisational culture and values (Kennedy & Berger, 1994; Davidson & Manning, 2004; Tkalčič, 2012; Gorenak & Ferjan, 2015). In the traditional service organisations, the organisational culture is based around the employees identifying themselves with the values and the mission of the organisation. In the platform economy, the role of organisational culture becomes even more so important, although it seems that is not focused on the idea of the employees developing an identification with the organisation. But rather on the idea of building a community of peers. Social analyses of persuasive discourses used by accommodation platforms point to the important role of the role of values such as sharing and authentic relations in platform operations (Lampinen & Cheshire 2016, Liu & Mattila 2017).

Employee training is a functional responsibility of the HRM as part of a strategic process of developing an effective workforce (Baum, 2006). Training and development has always been a challenge for the hospitality industry, with size of the lodging properties being an important factor (Janes, 2004). Due to the dependability of their business model on acquiring extremely large numbers of members, all geographically dispersed, platforms such as Airbnb first simplify the process so it can be learned quickly and second rely heavily on online forms of training and education. According to Baum (2007) in tourism the response to labour challenges was to reconfigure operations and service delivery ensuring that processes can be learnt very quickly by able people who are productive within a short period of time. While the tourism industry is slowly recognizing online learning (Braun & Hollick, 2006), we might be seeing an important rise in the online training with platforms, including forms such as online tips, webinars, “social proof” persuasive technique of showing good practice models and leadership by peers.

The training and development of hosts is critical for Airbnb and due to the vast numbers of geographically dispersed hosts, Airbnb relies heavily on online forms of training and education. Service standards are influenced and maintained by the performance and reward systems, and serve as a way build an identity. In addition to publishing standards and an extensive “help” section, Airbnb provides online learning webinars or “host toolkits” filled with best practice tips.

Expected work standards are presented in the rhetoric of hosts’ self-interest and not as rules to follow but as “tips to help you get great ratings”. A common means used by Airbnb to persuade the hosts into adhering with working standards is the ‘social proof’ persuasion technique (Cialdini, 1993). This technique attempts at persuasion by showing what other people do, while its effectiveness lies in the fact that people tend to look to others to determine correct behaviour in a given situation. For example, while trying to persuade hosts in adhering to the quality standards of experiences, Airbnb presents hosts as examples of good practice: “Meet a host who creates connection: Tia’s been crabbing in Charleston for years. Her welcoming personality, heartwarming stories, and ability to take a special interest in everyone have left a lasting impression on guests.” (Airbnb 2020f)

Adhering to standards in this way effectively means the members of the community serve as seemingly self-regulating community of peers. Buying into and remaining part of this community requires a constant comparison with others. Airbnb extensively engages in efforts to build a shared culture amongst its hosts via direct mechanisms such as publishing standards, hosting online discussions and offline meetups, and Airbnb events. Indirect efforts

can be found in its visual communication and “trust mechanisms” (Guttentag 2015), most notably the users’ profiles.

An important area of Airbnb’s discourse is calling to the ethos of “the spirit of Airbnb”, where again the concept of building trust has the central role. For example, while arguing why the users need to have an Airbnb profile and profile photo, Airbnb states that “when your profile is robust, it helps others feel that you’re reliable, authentic, and committed to the spirit of Airbnb” (Airbnb 2020g). While “the spirit of Airbnb” is not directly defined, implicitly it can be understood as an attempt at building an organisational climate based on sharing, trust, and feeling of belonging of peers (and not professional service providers). For Airbnb, building an online community with a shared culture that works towards a common goal is the mechanism for socialisation. For the hosts, this reality becomes a social media endeavour in which personality, self-presentation, authenticity and building trust is key.

Performance Remuneration and Monitoring Rewards

Finally, the most important researched and area of focus of algorithmic management is the use of digital technology for performance oversight and rewards, as a strategic process to secure quality output. Included are the processes of performance management, measures of appraisals, and the strategies or workers’ compensation, benefits and promotions, but also grievance and discipline procedures. Performance appraisals (Davies et al. 2001) and balance scorecards (Denton and White 2000) operate primarily through the methods of automatic oversight and customer grading of the product or service.

In algorithmic management), consumers’ reports become the prime element of operation since they are an important determinant in the allocation of a task or service to a certain candidate (Lee et al. 2015; Cheng and Foley 2019). While such operations are fairly obvious in some cases, they are hidden within algorithms in others. De Groen et al. (2016), for example, discuss that it is difficult to pinpoint how important ratings exactly are, but on ListMinus, a Belgian personal services platform, profiles with good ratings were typically awarded a disproportional number of jobs; the 6% of the earners with the highest ratings earn about one-third of the total revenues on the platform. Consequently, algorithms that determine the worker’s position in the search listings replace direct remuneration – the better the position the highest the worker’s earnings. Search algorithms thus become a type of pay-for-performance, judged by Sturman (2006) to be one of the most effective techniques of remuneration in the hotel industry.

We report findings regarding how hosts’ performance is monitored by Airbnb on two levels: (a) guests’ response and (b) automated monitoring of hosts’ online activities. Guests’ responses are divided into two main forms; reviews and ratings. Guests’ reviews are qualitative commentaries, visibly published at the profile of each host and primarily serve as recommendations for other guests. Here guests are free to write what they consider important and the reviews themselves (with exception of the number of reviews) do not serve as an automation within the Airbnb’s work performance management but only as a commentary at the profile listing. The most important element of automation draws guests “star-ratings” that enable a quantitative measure of performance.

One of the most common persuasive arguments for the hosts to respect the Airbnb working standards is the argument of “earning great reviews or ratings”, which implies hosts’ monetary interests via receiving more reservations and thus higher earnings. Yet rather than directly

stating the connection between earnings and guests' reviews, the positive reviews themselves become the main value towards which to strive, objectified as an unquestionable and self-understood motivator:

“To help create comfortable, reliable stays for guests, all homes and hosts must meet four basic requirements. Be responsive. Accept reservation requests. Avoid cancelling on guests. Get positive reviews [...] Guests like to know they can expect a consistent level of quality, no matter where they book. At the end of each stay, guests will review their experience with you, which is one of the ways we evaluate you as a host. Your overall rating is your average review score from all the guests you've hosted.” (Airbnb 2020b)

For the Airbnb's business model to function with 7 million accommodation listings and 50,000 experiences as available on Airbnb (Airbnb 2020a) at the time of the analysis it had to develop an automated means of performance management. The most important element of automation draws guests "star-ratings". The guests are asked to grade each accommodation host's service on a five-scale "star rating" with 7 questions of satisfaction with service quality. The largest group of rating questions refers to the quality of the communication process between the guest and the host: how accurately did the hosts' listing represent the space; how well did the host communicate with the guests before and during their stay; and how well did the guests' check-in process go. The other four ratings refer to: overall experience, cleanliness, value for the price, and evaluation of the accommodation location. In each category, the hosts are then able to see how they are rated, but also how guests rate the competition – the nearby hosts - and sometimes also Airbnb's tips to help hosts improve their listing.

In this way, algorithmic management ensures monitoring and evaluation of aspects of work that cannot (yet) be automated through technology. For example, at Airbnb, factors like cleanliness of the accommodations or the friendliness towards guests in direct interactions (not via online platform chats that can be monitored automatically) are elements that can't be easily automated. In the context of automated algorithmic sorting of workers in search engines, it's important to note that customer ratings and previous comments are typically publicly accessible to aid in selecting a host's service. Publicly posted ratings can also serve the purpose of comparing workers with each other and thereby encouraging competition. Platforms have varying policies regarding the public disclosure of ratings: for instance, Airbnb publicly publishes them, allowing customers to decide based on both qualitative and quantitative ratings and the search algorithm. In contrast, Uber does not share ratings with customers but uses them for automated algorithmic matching of drivers and passengers.

Customer ratings have long been an essential element of work supervision, especially in the world of online travel agencies, and Airbnb continues this tradition. However, online ratings have been found to be unreliable and skewed (Zervas et al. 2015), with some evidence of digital discrimination (Edelman and Luca 2014). What is different about Airbnb in comparison to other OTAs, however, is hosts' ratings of guests. While previously it was unheard of that lodgings would provide ratings of the guests, Airbnb introduced this as part of its "trust building" mechanisms of supervision.

As argued by Turnšek and Ladkin (2017), this mechanism is a result of Airbnb's initial business model when the biggest obstacle for potential hosts was the issue of their own safety and the fear of welcoming strangers into their homes. Airbnb still includes this feature, but it has become less important, likely due to changes in Airbnb's business model: the increasing

professionalization with the inclusion of hotels and intermediaries renting accommodations on behalf of owners, a growing number of hosts offering more and more accommodations, and the more frequent rental of entire apartments and not just rooms within the host's living space. A review of the literature also reveals that while there is a vast amount of research available on customer reviews for those renting properties through Airbnb, there is a lack of research on reviews by hosts assessing customers.

While these are potentially significant changes, the current development indicates that hosts' evaluation of customers is becoming less and less important in the platform economy's evolution. The issue lies in the fact that negative reviews do not encourage better customer behaviour; in fact, they can lead to customer dissatisfaction and attempts at retaliation (Kim et al. 2021). Therefore, Kim et al. (2021) caution against the use of this mechanism (for example, showing only positive ratings to customers), as negative rating experiences can lead to conflicts, worsened customer behaviour, and a poorer perception of the company's overall fairness.

In addition to collecting guests' and hosts' reviews and ratings, Airbnb undertakes performance checking via constant and automated monitoring of hosts' online activities. Hosts are monitored on the direct metric of success – the overall number of reservations. Hosts are also automatically monitored for their “unacceptable” behaviour – number of declined listings and number of confirmed but cancelled bookings. Finally, hosts communication with guests is monitored through the profile of up-date activities (e.g. number of pictures posted), response rate and response time (hosts need to respond as soon as possible and necessarily within 24 hours). All this automation serves the purpose of connecting performance with the rewards and sanctions, thus building a pay-per-performance remuneration, as further explored in the following section.

The central element of algorithmic management, applicable both in platform work and traditional industries, is automated control over work. This involves monitoring aspects of the work process that can be directly observed and digitally measured. For example, through technologies for monitoring workers in physical space (such as cameras, smartwatches, and activity trackers) or digital worker activities, such as response time to offered work and the number of tasks completed.

In location-based platform work, geolocation technology, among other things, enables automated monitoring of driving speed and real-time notifications to drivers to slow down and adhere to safe driving rules (Wood 2021). In online platform work, there are even more possibilities: keystrokes and mouse clicks can be counted, or the work screen can be automatically photographed at regular intervals. Initially, according to Wood and colleagues (2019), these forms of control were relatively cumbersome and could be easily bypassed, especially in tasks where greater worker autonomy is expected (in more complex tasks like design, programming, translation). Therefore, Tayloristic control in such tasks may even have the opposite effects, as it could hinder spontaneity, creativity, and the worker's independent responsiveness to customer needs. Hence, different forms of control are more frequently used here, particularly customer evaluation, which will be discussed further (Wood et al. 2019).

While the primary purpose of automated control is typically Tayloristic, in some cases, it can also protect workers. Wood and others (2019) report that some online workers positively accepted this form of control because, in such cases, they were paid for their time rather than the completed work, which they saw as a way to prevent wage theft. What was even more crucial for workers was that these data could be used in case of disputes with clients, which will be discussed in the following subsection.

The way Airbnb remunerates its hosts is primarily via placement and ranking of listings in the guests' search results. Here Airbnb tries to catch the equilibrium between negating any legal responsibility for endorsement of hosts and generating the largest possible revenues via promoting the successful hosts. The specific methods of placement and ranking of listings in search results are not made publicly available and are hidden in the algorithms of Airbnb operations. Airbnb claims that it has an algorithm of 100 inputs for search listing, e.g. guests' reviews, quality of photos, number of clicks on one's listing, use of Instant Book option, price etc., with different inputs being weighted differently, while how precisely this is done, remains a business secret.

In its Terms of use Airbnb provides only general information on this topic, claiming that:

“The placement and ranking of Listings in search results on the Airbnb Platform may vary and depend on a variety of factors, such as Guest search parameters and preferences, Host requirements, price and calendar availability, number and quality of Images, customer service and cancellation history, Reviews and Ratings, type of Host Service, and/or ease of booking.” (Airbnb 2020c)

Airbnb claims that it has an algorithm of 100 inputs for search listing:

“We have an algorithm that looks at over 100 signals to decide how to order listings in search results. Most of those signals have to do with things that guests care about, like positive reviews and great photos. [...] Not every signal is weighed equally, and you don't need to have a perfect listing or an unbeatable location for your listing to rank well. But there are some really influential signals that make a difference. Some of those include: how often guests click on your listing in search results, how often guests attempt to contact you from your listing page, how many booking requests you accept, if you use Instant Book, and how competitive your listing price is.” (Airbnb 2020d).

Algorithmic automation allows for remuneration hidden in pay-for-performance of the operations of search algorithms. It also allows for rewards such as a “superhost status”. Airbnb rewards the superhosts with more prominent appearance in guests' search results, emails and a special search filter, a profile super host “badge” that appears on the hosts' listing pages, an extra 20% on top of the usual bonus when they refer new hosts, and a \$100 travel coupon for those who maintain their superhost status for a full year (Airbnb 2020e).

Sanctions or “penalties” as termed by Airbnb include financial penalties (as in the case of cancellation of confirmed bookings) or having one's listing “temporarily deactivated” or “removed from the platform”:

“Every experience submitted to Airbnb is reviewed to make sure it meets these three quality standards: expertise, insider access, and connection. Once published, an experience must continue upholding these standards to ensure that it meets guests' expectations. [...] Experiences that don't meet the above standards may be removed from Airbnb. [...] What leads to an experience being

removed from the marketplace? [...] A new experience with 20 or fewer reviews may be removed if it receives one or more 1-, 2-, or 3-star reviews for 3 separate instances. An established experience with more than 20 reviews may be removed if its average rating falls at or below 4.7. (Airbnb 2020d)

In these cases, Airbnb argumentatively positions itself as the guardian of the guests' needs and rights and as the keeper of the community ethos and community interests, in what it terms its 'enforcement':

"We take cancellations seriously and ask all hosts to avoid cancelling on guests—their travel plans depend on it! You'll be subject to penalties, including financial penalties, if you cancel a confirmed booking." (Airbnb 2020b)

The working reality is that hosts operate within a framework of monitoring, which feeds into an automated system of ranking, subsequently influencing reward.

Theoretical and practical implications

Theoretical implications of this work are primarily in evolution of understanding of HRM to incorporate new forms of automation and extend the understanding of HRM within the continuum from human management to algorithmic management, especially in the world of mediated remote work. Additionally, this chapter enriches theoretical understanding of HRM by extending the dichotomy of online versus offline work and points to the need to incorporate the intertwining of both areas of work. At the same time, we point to inherent dangers of HRM in platform economy and algorithmic management such as potentially relying too much on the aspects of offline work that can be measured online (e.g. response time in minutes).

Practical implications of this chapter is in the first place recognising that the traditional functions of HRM: recruitment, socialisation, training and development and performance and reward are still very much valid and needed elements of HRM in the world of platform economy, algorithmic management platform mediated remote work. Presenting the case study of Airbnb shows how the digital giant and frontrunner in the industry is tackling the challenges of these traditional HRM functions in the seemingly very different type of work where there is no middle level management and the direction of hosts is fully automated. It also serves to warn with regards to potential dangers discussed below.

The innovative business models that have arisen through the sharing economy have facilitated change in the travel industry for consumers and producers, and Airbnb is unprecedented in the magnitude of disruption it has caused to the traditional accommodation sector. The practices behind the process of performance and rewards and the use of algorithms has unintended consequences for Airbnb hosts, some of which may aggravate certain existing features of accommodation work.

Undoubtedly, the platform economy and the use of algorithms raises ethical concerns beyond the specifics of Airbnb. Dehlendorf and Gerety (2021) argue that the current technological progress includes three ethically problematic trends that encroach on workers' power and rights: (a) worker surveillance and automated management to increase the pace of work; (b) scaling up on-demand and just in time labour models to decrease wages and offset risk; (c) deskilling jobs to lower wages and decrease the cost of high turnover. Algorithmic management as performed by Airbnb interrelates all of these three trends, reflected on below.

Our research primarily showed the surveillance characteristics of algorithmic management as used by Airbnb. Algorithmic management as present within Airbnb consists of three elements. The first is the application of rating and ranking systems that result in indirect pay for performance operations. By calculating a large number of performance criteria, the workers (e.g. Airbnb hosts) are positioned within the search results of the customers, thereby receiving new work based on their previous performance. These calculations are generally referred to as positioning algorithms, hence algorithmic management. The second element of algorithmic management is the primary value of customers' feedback in the performance criteria, which has a long history in the customer management' strategies, entailing discursive positioning of customers rather than managers as agents that need to be pleased (Wood et al., 2018). In this way, algorithmic management secures monitoring and evaluating of the aspects of work that are of non-digital nature (e.g. cleanliness of the facilities or friendliness upon arrival) and cannot be measured directly within online activities of the workers. Third, our research indicates that within algorithmic management the elements of work that can be directly observed and measured digitally within the online platform (e.g. response time and frequency) receive relatively high importance within the overall positioning algorithms.

In terms of labour on demand, hosts' responsiveness is important for business success and is continuously and automatically monitored, leading to pressures for a flexible, twenty-four seven work operation. The expectation is the host to be constantly available for online, often smart-phone supported communication with current, past and potential future guests. This tends to facilitate a poor work-life balance for hosts in common with the small business operators in the traditional accommodation sector. Airbnb's business model belongs to the family of "on demand" and "just in time" business models whereby the risks of irregular scheduling are being transferred from the employer to the employee. Irregular scheduling has important consequences not only in terms of financial stability but also work-family conflict and stress (Golden, 2015). Although the case study here is on Airbnb, algorithmic management is probably the direction also within broader hospitality industry. Further innovation could potentially apply algorithmic management to connecting hospitality workers with industry, allowing for highly flexible work arrangements while solving the issue of peak seasons / hours. This could provide for flexibility for workers in deciding when to work (providing there is both enough work and enough workers). However, experience in other industries shows that it might also take a very dark direction, depending primarily on the power and will of work providers. For example, Dehlendorf and Gerety (2021) point to Walmart - the world's largest company by revenue - as an early pioneer in utilizing centralized scheduling algorithms to match work schedules to peak customer hours, ensuring that workers did not cross the hours threshold that would make them eligible for full-time benefits.

With regard to deskilling, tourism and hospitality have long bourn witness to the process of so called "McDonaldisation" or deskilling of jobs to lower wages and decrease the cost of high turnover (Baum 2007) – the direction that is further potentially aggravated with platform work and algorithmic management. By targeting hosts with no prior experience Airbnb is essentially deskilling the accommodation provision. It addresses the lack of skills with online tutorials, good practice examples, and socialization of its hosts. However, research shows that for providers there are barriers to entry depending upon not only their material assets but also symbolic skills - for example, the skills of aestheticisations, language skills, digital literacy, and knowledge about and manipulation of algorithms (Lee et al., 2015, Trdina et al. 2021). As argued by Trdina et al. (2021) the ability to propertise one's self and one's culture (as an exchange value) generates new forms of exploitation on Airbnb based on immateriality. This is reflected in the principles of platform economy as new business models personalise the exchange and monetise previously non commodified realms of (private) life (what is being shared/sold besides the service is also one's personality, taste, culture, etc.). Platform work

may therefore have broader consequences concerning the ways in which in today's society inequalities are reshaped and reproduced through 'resourcing of self' (Trdina et al. 2021). Furthermore, despite the travel-related platforms' formal claims of openness and inclusivity, there is evidence that they do not eliminate class, race and gender discrimination and inequality (e.g. Edelman and Luca 2014).

Finally, a further identified trend is the issue of a lack of transparency on how algorithms work. De Groen et al., (2016) discuss that it is difficult to identify the content of algorithms and thus, for example, to pinpoint how important user's ratings exactly are in the oversight of workers, concluding that in addition to the standard determinants of workers' earnings (e.g. gender, age, occupation, etc.), the characteristics and evaluation mechanism of the platform have a large influence on the distribution of tasks and earnings. Endeavours to understand, make sense of and capitalise on the algorithm rankings used by Airbnb hosts have been reported elsewhere (Cheung and Foley, 2019). However clearly algorithmic opacity creates ethical challenges (Gal et al., 2020a) and goes against transparency in how employee performance is measured.

Conclusions

As argued by Turnšek & Ladkin (2022) with the move towards remote working brought about with the COVID-19 pandemic, we can only expect the issue of using algorithms for remote control over workers to extend well beyond platform economy into other areas of various industries, tourism management and marketing being at the forefront. Next to the pandemic trends towards remote work, other reasons are also the relative consolidation of the first wave of platform work, the post-pandemic need for human resources and related redirection into automatization, and finally, the crisis-related quest for optimisation of work processes and diminishment of costs.

Algorithmic management was used prior to the crisis. However, what we expect is the acceleration of algorithmic management and the likelihood of this extending beyond platforms into other areas of human resources management. While algorithmic management has gained attention with platform economy, we agree here with Baiocco et al. (2022) that algorithmic management should be understood as the digital evolution of certain pre-existing trends that have long characterised the organisation of economic activity. Algorithmic management is not confined only to digital platforms but is rather increasingly embedded in "regular" workplaces. There, algorithms can perform similar functions to a more moderate extent (or at least less documented) than in digital labour platforms, but the new practices interact and thus change pre-existing features of the organisations that introduce algorithmic management systems. It is progressing in the retail, and food and accommodation sector, from hotels to food chains, including the algorithmic allocation of work shifts to coordinate and command, and rating systems for algorithmic monitoring and evaluation to control workers (Baiocco et al. 2022).

Limitations

The research has limitations. Inferences are made from a single case study therefore the findings are indicative and cannot claim to be generalisable. Airbnb was chosen due to a combination of the success of the company, its geographical reach and the large number of hosts who operate on the site. Furthermore, the analysis is based solely on information which is contained on the formal Airbnb website. As documented elsewhere (Hardy and Dolnicar 2017) there is an informal system of regulation, socialisation, training and development that takes places amongst hosts within the platform economy. Finally, the analysis focused only on Airbnb design and voice, while excluding the ways workers understand these directions and how they navigate the proposed rules and whether and how they internalise the proposed ethos of community building and organisational culture.

Suggestions for further research

As noted above, further research should primarily incorporate the views and processes of navigation of hosts / workers in these new forms of HRM. Additionally, further research should incorporate other platforms but also analyses of how algorithmic management and automation of HRM is extending in traditional industries, such as non-platform based “old school” hospitality businesses. Furthermore, managerial reasons, aims and processes of experimentation should be included with other methods, e.g. interviews with Airbnb management and other managers. This would to some extent try to address the limitation of algorithms as a business secret and primarily give more insight on why specific measures were selected and what the managerial expectations were before implementation and what were the lessons learned. Finally, further research should follow the development within a longitudinal study, analysing how the processes are changing though time in response to changes in tourism market, worker demands, platform regulation and technological development, artificial intelligence and further changes in workplace surveillance.

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Key Terms and Definitions

Algorithmic management – a type of human resource management (HRM) which incorporates algorithms as automated decision making within at least one of the traditional functions of HRM: recruitment, socialisation, training and development or performance evaluation and reward of workers.

Human management – a type of human resource management (HRM) which is completely reliant on human decision making in the traditional functions of HRM: recruitment, socialisation, training and development or performance evaluation and reward of workers.

Platform work – remote work which is enabled via online platforms and can be performed either completely online or offline but is directed and supervised via an online platform.

Automated monitoring of performance – surveillance of performance quality of the work characteristics that can be measured real-time and via technological means (e.g. response time).

Customer reviews – surveillance of performance quality of the work characteristics that cannot be automatically measured but depend on customer feedback, either quantitative or qualitative.

Automated pay-for-performance – rewards of the worker based on the automated surveillance and/or customer reviews, usually in the form of positioning within the platform search-engine algorithm and thus receiving more work and not necessarily better pay for the work.

Airbnb – online travel agency starting its business model by targeting non-professionals to become hosts in exchange for remuneration, thus at least in the first years self-identifying as one of the “sharing economy” platforms yet following the online travel agency business model (e.g. Booking.com or Expedia.com) rather than true sharing economy platforms such as Couchsurfing where hosts share for free.