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Evaluation of Algorithmic Management of Digital Work Platform in Developing Countries

Olalekan Samuel Ogunleye and Billy Mathias Kalema

Abstract

The economy of the Modern Work Platform is becoming increasingly relevant due to the spread of information and communication technology. As a result, digital work has gained popularity as a source of employment, especially in an economy where finding decent work is becoming increasingly difficult. Computer algorithms are now being used to alter and change the way people operate in increasing job specialization, handling large-scale human labour in a distributed manner. In these structures, human works are delegated, supplemented, and analyzed using tracked data and algorithms. Building on emerging algorithmic literature and qualitative examination, this article assesses the mechanisms by which the digital network manages staff in the sense of Uber, Bolt (formerly Taxify). It describes the difference in the degree to which such platforms limit freedoms over schedules and activities relevant to gig work. Based on in-depth interviews with 41 respondents working on different digital media and a survey of 105 staff on the same platform, the study finds that while all digital work platforms use algorithm management to delegate and assess work, substantial cross-platform variation. Uber, the largest network for ride-sharing, exercises a type of control called “algorithmic despotism” that controls the time and activities of staff more strictly than other network distribution firms. We end with a debate on the implications for the future of work of the spectrum of algorithmic power. It also addresses how algorithmic management and data-driven systems can be developed to build an improved workplace with intelligent machines, with implications for future work.

Keywords: algorithmic management, digital platform, intelligent systems, on-demand work, performance evaluation

1. Introduction

The capacity to work enables human beings to engage in conscious constructive and imaginative practices that alter and define nature so that human beings can create their means of existence to fulfill their needs, which in themselves constitute the creation of material life [1]. An online job is a term that has been a vital ground for debates in the political economy of internet technologies [2]. The Automated Job Network is a framework in which businesses such as Uber, Bolt (formerly Taxify), Takealot, JumiaEat, Otlob, and others use cloud-based technologies to “match” staff on the customer platform [3]. However, the spread of interactive work networks

has been one of the significant revolutions in work over the last decade. Moreover, the Network Capitalism [4] is part of a broader transition from usual job security to variable employment conditions, including contract, contractual and part-time work.

The amount of data generated from several organizations' processes and activities made it possible for software algorithms to accumulate and interpret data, making it possible to contribute to management and decision-making processes [1]. As a result, data-driven algorithms allow digital work systems to handle transactions between thousands of network staff automatically. These algorithms assign, refine, and analyze the jobs of different platform workers [2].

We apply to automated algorithms that perform managerial decision-making and institutional instruments that assist algorithms in the practice of algorithmic management. Algorithmic management helps companies like Uber, Bolt, and many more oversee the platform's multitudes of employees in an improved way, on a wide scale. Algorithmic management is one of the key technologies that facilitate virtual organization management. A variety of ride-sharing systems, such as Uber and Bolt, have helped connect independent, dispersed drivers with customers who need systems within minutes or seconds. Simultaneously, service rates change rapidly, based on how the demand increases from applications installed on their mobile phones.

Algorithmic management allows individual human administrators to oversee drivers at any place where the ride-sharing systems run, including on a global scale. As a result, drivers had little to no prior contact with the company's members. However, they should communicate via online platforms (such forums) to enhance their social awareness of ride-share programs. This scenario helps one research what happens when algorithms delegate jobs, refine work activity through information analysis, and measure or measure job performance.

This leads to some key testing questions: are human workers (i.e., drivers) engaging and agreeing with work that is algorithmically delegated to them? Are human workers inspired or distracted by algorithmic optimization, and if so, by how much? How successful and accurate is the data-driven assessment of this algorithmic administration, and how do human employees feel about it?

The first move in answering these questions was to interview 41 drivers with Bolt and Ubers. We then triangulated their answers, interviewed 19 passengers, and studied the online driver forums' archived discussion.

Our findings highlight difficulties and opportunities in the architecture of human-centered algorithmic job management, evaluation, and knowledge. The results further underscore the value of fostering sensemaking around social algorithmic structures. We use the results to explore how data-driven algorithmic management can create a safer working atmosphere for intelligent machines while providing potential work recommendations.

2. Research background: Uber and Bolt ride-sharing services

In Africa and most developed nations, Uber and Bolt are probably the prominent peer-to-peer ride-sharing firms. Uber has been operating in over 100 cities across 37 countries between 2009 and 2013, and Bolt operates in more than 80 cities across 33 countries. Bolt is trying to create a social atmosphere among its clients, inviting riders to occupy their front seat and embracing the driver in a generous act of celebration. Uber creates an environment for more specialized drivers where social experience with the driver is not emphasized. Everyone older than 21 with a driving history of at least one year and a valid driver's authorization will become a

driver on the network. Apart from this, inexperienced drivers are forced to attend short online video orientations via background checks. As soon as a new driver is admitted, the candidate becomes a self-employed agent, not workers. You are wholly controlled by where, when, and how far you travel.

2.1 Algorithmic management within the digital work platform

Under Uber's and Bolt's platforms, the management of ratings and ratings with information, decision-making, and appraisal functions of human managers under organizations is focused on three algorithmic processes: passenger-driver matched, interactive display of price-priced areas, and data-driven assessments [5].

2.2 Allocation of work on the platform: driver-passenger pairing

Drivers must activate their platform app to perform their function. This allows drivers to get their work done and execute it. According to Uber, "the nearest driver to this rider immediately gets the tour order in a 15-second timeframe to receive it," until the user orders a trip across the portal (i.e., the smartphone app) [2]. But both Uber and Bolt deny specifics of the pairing algorithm based on proximity. Our analysis, however, showed that the algorithm could also have other variables. The passengers' request contains information on the location, image, name, and rating of passengers.

When the driver agrees with the request, it will notify the passenger, and the driver will be able to drive to the position where the passenger is waiting for the driver to begin the journey. Both Uber and Bolt do not have the option or drivers' desires, whether they choose to obtain on the network for those passengers or trips. Both platforms facilitate passive dismissal of allocated passengers only, i.e., if the driver does not want to approve the request, the accepted 15-second window must wait before a passenger's new request is sent for the app.

2.3 Dynamic platform display of surge-priced areas

The regular fare defines the price on the network, which fluctuates according to a complex pricing algorithm, which dictates how the pricing is processed. The businesses are working together to make this feature clear to drivers and the public. This chapter would adopt the word Uber, i.e., "surge price" as demand exceeds supply, competitive pricing algorithms tend to rise, and price increases to support market equilibrium [2]. "Dynamic pricing" is used by Bolt Surge pricing will play a vital role in form driver sales, as the 80% commission stays stable during these high price cycles. As of July 2019, the two organizations, with a chart with areas shaded in various colors depending on the real-time price measured, high-priced display areas inside the network. To allow the demand and optimize the overall number of purchases, drivers can switch to locations with higher driving demands (and prices) than available drivers.

2.4 Rating and acceptance rates system used to monitors drivers' performance

Once the ride is completed, all riders and drivers can evaluate each other through a ranking system built into the platform. The ranking system is a five-star rating system. Bolt points out that when a driver is scored, it is critical that passengers consider whether their drivers are generally polite and polite, that they navigate well, that they are safe, keep the car clean, and want to use Bolt again [2]. The driver also has the approval score, which is determined by the number of approved rides

divided by the driver's total number of requests. Drivers are encouraged to maintain a high rate of acceptance of the ride by periodic incentives providing hourly pay that is assured if the driver's acceptance rate is above a certain specified amount. Drivers with low average passenger rating and approval rates are subject to scrutiny. They will also automatically face deactivation on the network. Likewise, riders with a low rating score are at risk of being refused by drivers. Drivers have the option to disregard incoming requests from low-rating passengers below their desired threshold. Drivers that retain strong passenger scores and approval rates are often elevated to advisors or recruiters. In addition to driving for the service, mentors and recruiters recruit new drivers and oversee the application process while receiving additional money for these jobs.

3. Methods

The study is focused on studies conducted between April and August 2019. The study was mostly based on 41 detailed qualitative interviews of those working on the interactive job channels (i.e., Uber and Taxify). We selected interviewees from among those who replied to the broader survey. A non-random survey of 355 Uber and Bolt drivers was performed, and quantitative data from this more general population was also obtained. Following the claims made by [2], we started our research with a web-based survey designed to hit drivers on leading shared riding platforms: Uber, Uber Eats, Bolts, and others. These businesses consider their network staff as independent contractors and not employees.

We recruited drivers to take part in our mobile online survey in two ways. First of all, we aimed ads to Facebook network drivers. The benefits and drawbacks of using Facebook ads for low-wage jobs can not be overemphasized [2]. The prevalent use of Facebook in South Africa and other developing countries makes it a valuable sampling environment. It should be judiciously compared to the telephone-based means of interviewing [3]. We tailored Facebook advertising for our survey to individuals between 18 and 55 who spoke English and reported working on one of the two channels. The commercial was shown to 47,981 users, some of whom were shown advertising several times, and 4869 users clicked on the survey link, just above 10% of those to whom the commercial was shown. Of those who clicked on a survey link shared in the commercial, 476 described themselves as platform staff started the survey, and 355 completed the study.

Respondents to the study were not indicative of the entire employees of the site. Those who marked themselves as platform employees on their Facebook profile, and those who belong to communities connected to the interactive job platform on Facebook – the two networks from which respondents have been drawn – may be more attached to this job than other platform employees and may also vary from the people of other platform workers in different unexpected ways. Given the lack of data on this digital workforce forum's makeup and experience and the difficulties of accessing this sample demographic through other means, the analysis presented here provides a significant, although the non-representative, reflection of this developing market.

One of the questions posed in our online survey was whether the respondent would participate in an hour-long telephone or in-person interview with R120 as an incentive for participation. We called for contact details from the interviewees who showed a desire to schedule the consultation. Of the 355 people who completed the online survey, most (245 or 69%) showed interest in engaging in the follow-up interview. To determine who contacted the 245, we tried to optimize diversity in terms of age, size, ethnicity, geography, political preference, and family household

income. We conducted interviews with 41 platform staff or 11 percent of those who showed interest, and interviews lasted at least one hour or less. We use pseudonyms all over to protect the anonymity of the respondents.

Although our survey is not generalizable to the digital network workers' population, interviews have helped us classify processes using reasoning rather than statistical inference and to achieve fullness [4]. Also, we found the same similarities through interviews, which enabled us to trust the findings: that is, identical similarities in the interviewee's account across various platforms. However, we equate different employees' perspectives on other interactive job platforms or the same worker's experience working on multiple platforms. Remarkably, respondents consistently emphasized Uber's higher level of time and task management relative to other networks.

3.1 Passengers interviews

The responses were triangulated by questioning 19 passengers who used or are currently using Uber and Bolt at 6 locations in two cities (Pretoria and Johannesburg). On average, the passengers used the service 4–7 times over three months. Ten of the passengers questioned used both Uber and Bolt, 4 used only Bolt, whereas five used only Uber. The interview aimed to either affirm or disprove the impressions shared by drivers of how passengers use the platform, mainly how drivers are classified and their actions and attitudes towards price increases.

3.2 Analyzing archived data: drivers' online forum

We analyzed the drivers' details on the online forums where all drivers are registered to do so. This is because most drivers said in our interviews that the forums were the primary source of information and places for them to socialize. Two online forums have been observed: one that is not moderated by Uber and Bolt, like different Facebook communities, and the official Facebook pages moderated by Uber and Bolt.

One author who registered as a Bolt driver was granted access to Bolt's (Taxify) and Uber Driver's and Clients 'new driver' Facebook forum, which provides information that is specifically relevant to the business. We also entered other unmoderated private driver groups on Facebook by applying to participate as researchers. This was done to prevent being mistakenly posing as a driver. We have retained a single observation status during this review. To ensure that the method used in [5] was followed, we sampled 142 posts and responses on the online site, noting the algorithmic features chosen from the thousands made over three months.

4. Analysis

We triangulated our observations by conducting and archiving interviews. The interview transcripts [6] were also evaluated qualitatively. The posts excerpts were reviewed, and on the web platform, responses were analyzed using the qualitative data coding program Atlas. The dataset was then classified using three platform algorithmic features, and the data were then opened to the level of the phrase or paragraph around each function. We evaluated the remaining data to identify essential subjects, including social sensibilities and socialization. This led to the introduction of a total of 289 definitions. The ideas were later grouped into 16 themes, and emerging phenomena were clarified. To understand the connection between categories, we concentrated on eight categories related to our research

questions concerning algorithmic management. When checked at 10% of transcripts ($Kappa = 0.81$), the final coding method demonstrated strong reliability over two coders. We have been able to settle disagreements between coders by debate.

5. Findings

This section discusses how drivers reacted by assigning work algorithms, supporting details, evaluating work success, and how drivers socially make sense of the system's algorithms using online forums.

5.1 Background: driver inspiration

According to the drivers interviewed, one significant advantage of working on digital platforms is the high degree of versatility that the system has when and when it operates on the modern operating network. The low level of commitments and dedication necessary for signing up for the platform is another advantage stated by drivers. Many drivers work on the system full-time, and others do part-time—some work for fun, some of them to feed their curiosity. Many drivers used the forum to coordinate their everyday routine in gaining extra revenue. In addition to the platform's financial versatility, several drivers interviewed said they draw social motivation from the venue. For example., some drivers found meeting enjoyable, connecting with new people, and inspiring the group to participate.

5.2 Algorithmic management: proximity-based passenger-driver pairing

Our findings demonstrate how the openness of algorithmic assignment and the matching of drivers with passengers impact driver communication, workaround, and work strategy. It further describes the potential impacts of computerization decisions used by staff in a particular conventional working environment.

5.3 Collaboration with algorithmic management in terms of passenger allocation

A previous study argues that humans will collaborate less with computer automation activities than human beings. For Uber and Bolt, passengers are allocated to drivers on their applications. There is a guideline on the pace of acceptance and a cut-off period for approval, which motivates drivers to consider as many algorithm assignments as possible. One of the drivers interviewed explained the following: *“passengers may only be refused if the choice can be made within 15 seconds. Both Uber and Bolt find it impossible to deny allocated passengers for different reasons. And if the position on the map where you pick up a passenger is displayed, whether you are unfamiliar with the area, you will not be able to decide within 15 seconds if you want to go to that area.”*

Remarkably, one of the reasons that improved drivers' engagement was to figure out whether or not the assignment of passengers made sense to them. While the passengers' assignment was generally based on the similarity between the driver and the passenger location, other considerations led to the assignment. The following variables are the mutual ranking between the driver and the passenger and the driver's login time. This sometimes causes an appeal from remote passengers delegated to drivers who are not closer to passengers. As this situation transpires, several drivers testified that they did not acknowledge the “uncomplimentary” trip task,

considering that they must travel a long way (such as more than 10 minutes) to pick up a passenger. Another driver interviewed,

for example, explained: *“I monitor where other drivers are when I’m not with a passenger. So, if I see between two to four drivers in area X and a request is coming from area Y to area X, given that there are at least two to four drivers sitting right there ready to go, then my instinct will tell me that one of two things would have happened. All the drivers transfer the trip request, which is unlikely because they cannot be sitting there and transfer the assigned trip. Or the GPS mapping was not properly coordinated by the system that is assigning the passenger. Then there is a mistake in sending the request to me who is over ten minutes away from the passenger instead of assigning it to a driver who is at least a minute away.”*

The explanation above found it difficult to grasp whether the algorithm assigns the passenger to the driver in error or for legitimate purposes. That’s because we could not clarify how the driver app algorithm determined the assignment. Another driver interviewed believed that the task is often made by accident and that he opposes it. However, regardless of how far and inconvenient a passenger assignment might be, drivers can consider the assignment as long as it makes sense to them. For instance, one driver explained as follows: *“When it comes to distance, sometimes I’ve driven as 15 kilometers, and I know that the fault was not the fault of the passenger. It happened that there weren’t many drivers out on the day I happened to be the closest driver at that time.”* This means that the explanation for those passenger assignments might have been significant, but at the moment, this was a feat.

5.4 Workaround strategies for algorithmic assignments

Drivers on the platforms recognize that the classification of passengers is dependent on position proximity. This allowed them to prepare and collaborate to monitor the algorithmic assignment as part of the existing device functionality. They carefully manipulate when and when to work and when to turn to the driver mode on the app so that the kinds of requests and passengers of their choosing can be delegated to them. They limit the location they operate by shutting off the driver feature on the app while returning from a long journey, avoiding low places to prevent dangerous and hazardous conditions, and not going to neighborhoods where the bar is situated to avoid intoxicated riders. They restrict their place to suburban areas to push customers to bars. They get repeat passengers by phone into the travel arrangement, asking passengers to call for a ride while they are in the driver’s seat to be allocated.

Some drivers keep away from each other by monitoring other drivers’ GPS positions to avoid vying with each other for passenger demands. If drivers take a rest but do not want to turn off their driver app to benefit from the hourly payment promotion, they park their cars in the same place on the GPS, which stops them from receiving any trip order. Both Uber and Bolts express only basic assignment rules, such as “closest drivers are assigned to a ride.” This basic understanding allows drivers to maneuver around algorithm assignment strategies. However, the task algorithm’s lack of specifics seemed to promote drivers’ reluctance to make decisions, often giving them a pessimistic mood to the firms. One of the drivers explained the following: *“Uber is very tight-lipped on what is going on. What I’m saying is they inform us ‘we only assign it to the closest driver,’ but we don’t understand what is happening behind the scene.”*

5.5 More understanding of the algorithm to the benefit of the driver

Our analysis showed that drivers benefit from a thorough understanding of the algorithmic assignment. Drivers with more experience and knowledge of the method build workarounds to escape unwanted trip assignments. In contrast,

those with less knowledge and understanding reject undesirable trip assignments, reducing their approval rates. One of the drivers, for instance, clarified that Bolt's assignment algorithms weigh the number of hours the drivers have been online, and the proximity of the driver's radius to pick up passengers increases the longer they wait for passenger assignments. As a result, he uses his knowledge of the algorithm to turn on and off his driver program periodically when at some stopping point, to disable the device from assigning remote trip requests to him. However, not all drivers have access to this knowledge. Our findings have shown that Bolt drivers who do not understand how the algorithmic assignment functions have attributed the remote assignment to the machine error. Many assumed that higher-ranking drivers would earn priority passenger assignments. These drivers are unable to establish workaround techniques to prevent the assignment of remote trip requests.

5.6 Algorithmic assignment versus preferred pick up

Our results suggest that drivers are usually pleased with the amount of power they have over the assignment algorithms. However, a few drivers have clarified that they are not happy that they have no control over the radius that the assignment algorithm attempts to send passengers to them. One driver interviewed, though, clarified that he wants the assignment algorithm to function to see all the incoming trip requests to pick the one that matches his choice from among them. He also clarified that he had a plan to select the trip requests' position, and he learned the knowledge and comprehension of how best to use them.: *“At some point on some days, there usually are many good trips within some areas. For instance, on Friday, around 6 pm in [area names hidden], there are many trips to and from the airport trips. So, you focus on those.*

Another good thing is that if it's a busy Friday night. And the best way to get that done is to take something that's not in a close area, maybe going far, but then coming back in. It gives us the option for a change of pace.” Uber and Bolt's algorithm assignment removed this slight degree of power and predictability. He said that while he tried his hardest to be in those positions in Uber and Bolt's system, there was no assurance that the system would delegate trip requests to him in those places. He's frequently assigned trips outside the area he likes, and he did not want to travel to those places just for a change.

5.7 Algorithmic system does not cater to the driver abilities, feelings, and motivation

Some drivers clarified that hike rates are implemented in some familiar places instead of using the device in any community. They also explained that they frequently travel far to these places as soon as they get alerts about the increased prices. However, half of the drivers interviewed are not inspired by a rise in price notification because the supply-control algorithmic framework caters to their skill, emotions, and inspiration. It was also found that the surge-price shifts too rapidly and unpredictably so that they could not be used in a competitive way to raise their incomes. Furthermore, being in the surge region guarantees that travel requests would be distributed within the area. Any drivers have clarified that the spike price often disappears as they arrive in the spike region.

5.8 Data-driven algorithmic evaluation: performance evaluation through driver rating and acceptance rate

The guidelines used for the approval rate and the driver-passenger rating system benefit the system's overall operation. However, this quantitative method makes

drivers responsible for all relationships and is often perceived by drivers as unjust and does not have a meaningful or desirable result, thus negatively affecting drivers.

5.8.1 Treating all assignment rejections equally: an act of unfairness

The acceptance rate regulation requirement is used to encourage drivers to accept most of the requests, which allow more passengers to be allocated to their journeys, arrive at their destination on time, and inspire trust in the use of the platform system. The fact that the degree of approval of the assignment is sustained puts a high burden on drivers to consider most of the trips assigned to them. For example, one of the drivers interviewed explained why he often welcomed a request, even though it was not acceptable for him to consider it.: *“I had no choice but to accept it. I accepted because I want my acceptance rating to go high. We are under a lot of pressure. I cannot give any reason as to why I do not accept it, so I have to accept it.”*

Similarly, Assignment algorithms penalize rejection of passenger requests by drivers, which reduces the driver’s approval rate. However, specific drivers often have legitimate reasons, excuses, and circumstances that explain their reluctance to accept travel requests. For example, drivers can prefer not to welcome passengers without photographs at night for safety reasons. Some queries are diverted to the drivers when a few seconds are left for the drivers to approve. This could be attributed to technical issues with the system. Drivers often send e-mails to the company’s representative(s) when they believe they have legitimate grounds to refuse the appeal, considering that they will not be penalized for legitimate refusals. Still, most of the time, their e-mail will go without getting a reply from the members.

5.8.2 Using quantitative data only leads to inaccuracy in quality of service

Our study indicates that the Passenger Driver Rating System builds faith and operation behaviors in network work schemes. However, there is not sufficiently metric to be used for driver efficiency assessment. Some drivers rely on passenger ratings as indicators to approve travel requests from passengers or not, believe more in higher-rated passengers, and exercise caution on lower rating passengers. Any of the passengers interviewed clarified that while they ignore driver ratings, the fact that the driver rating system is in place gives them a sense of protection.

The ranking system also allows the drives to provide a feeling of standard service on all their trips. One of the drivers interviewed, for example, explained: *“I want to get five stars. So, I make sure that I am friendly. I relate with the passengers. I ask them their preferences immediately; they step in the vehicle. I ask them if they want me to switch on the Aircon or heater. Or they want me to roll the windows down or up depending on the weather. I also ask them if they will prefer that I play the CD or listen to Radio. And to ones that want the music played, I ask them what type of music they would like to listen to? I sometimes offer them sweets and gum.”*

Drivers take ratings very seriously. High ratings like 4.95 have become the basis upon which some of the drivers pride themselves. Although scores below 4.0 upset some drivers and cause them to fear losing their work on the network, they fear being tracked, measured, and arbitrated by customers. These seem to have adverse psychological effects on those who have not scored close to 4. One of the drivers interviewed explained the following.: *“you are forced by the rating to be careful and cautious. Because it looks like what you are doing is being monitored, rated, and judged. If your rating is low for some time, you could be asked not to drive for some on the platform and reapply for the job later.”*

Some drivers believe that their passenger scores are not a fair representation of their success in terms of operation and driving, as one driver explained: *“It’s like in rugby, the line-up does not indicate the specifics of a player. A player could hit three runs, and three tries it doesn’t mean that such a player is a productive player.”* Some drivers also explained that passengers’ psychological and physical conditions, such as being drunk, having a hurry to meet, or catching a late flight, are often reasons they give lower ratings after the trip. They also explained that some passengers interpret the machine anomaly or algorithm functions as bad experiences. This is because they are sometimes unable to manage due to errors (such as GPS errors, traffic jams, rising pricing, etc.) on their side. As a result, they give drivers lower ratings.

5.9 Making sense of the online platform as a forum for discussion

Drivers on the digital work platform function separately in distributed locations and, when they do, make use of internet networks as a significant avenue for their socialization. They use online communities such as Facebook groups, WhatsApp, Telegram, Line, Hangout, etc. as sites for different forums to address their work on the site and the algorithmic site management. One of the constructive aspects of making sense of the online forum is to explore how driver efficiency in terms of ratings and recognition can be strengthened and sustained.

Experienced drivers are often eager to exchange strategies and suggestions with inexperienced drivers who ask questions about boosting their scores. They’re willing to do this, relying on the expertise they have gained over time. One of the new drivers in one of the forums, for example, asked how to raise his scores after 74 trips in four weeks. Approximately 120 comments were made within three hours of the publication of the query. Some drivers sympathize with his feelings; some share their everyday encounters as part of the first challenge of getting to the platforms. However, several commenters expressed the specific tricks they use, such as designing a service information manual for their cars’ back seat, heading to the Central Business District (CBD) at lunchtime on several short journeys building genuine connections with travelers, etc. Any seasoned drivers often make it clear to beginner drivers that ratings will be steady over time and warn them not to encourage tension to get too much on ratings.

However, in terms of knowledge utility and practices that use assignment algorithms and rising pricing, they tend to have a lesser impact. Most of the posts that raise questions are concerned with how assignment algorithms and surge pricing work, understand the competitive display of surge pricing, and the fields in which higher pricing is often applied. Most of the real-time questions and conversations are about exasperating events — no travel requests in high-priced places or remote travel requests that entail long driving periods.

Much of the online forums’ conversation centered on offering emotional and social help instead of informational support. For instance, the driver’s post was a matter in which he was irritated at the trip request by the algorithm assigned to him, which forced him to ride from east to west of the area, even though he could see other drivers in the vicinity of the passenger making the request. Much of the comments in response to the post were worried about giving emotional support. However, there were no remarks to justify why the algorithm allocated such a trip to him. Company representatives usually do not appear on the forums to answer the driver’s questions.

6. Discussion

This section discusses how our findings will continue to develop and improve the architecture of algorithmic data-driven management.

6.1 Designing and enhancing the algorithmic trip assignment

Myriads of Algorithmic Passenger Trip Requests for Drivers on the Automated Work Network, such as Bolt and Uber, are made automatically within seconds of ride requests. The regular and speedy approval of the drivers' assignments ensures the platforms' operation's reliability and efficacy. Hence, it is the potential to maximize the number of passengers who can make short journeys. Our results indicate that the task is not based purely on the root of the task (i.e., person versus algorithm) in the digital job site's algorithmic management. However, how the assignment is performed and managed, how staff on the site interact and agree with the assignment [7]. According to the study's findings, the details displayed on the computer, the constraint of the time to approve the request for a ride, and the approval rate jointly decides the degree of cooperation between drivers and the assignment algorithm.

Furthermore, our findings indicate that the openness of the algorithmic assignment's method can enable algorithmic management to produce a high degree of coordination and cooperation with drivers. While Uber and Bolt clarify that their algorithmic handling of assignments is based on the proximity of drivers and passengers, our findings suggest that there are other considerations that the algorithm takes into account. This is why passenger demands are often not allocated to drivers who are nearest to travelers. [8] suggests that the art of describing or encouraging staff to ask questions about each trip assignment may help minimize drivers' refusal rate when assigned to a trip that is not close to them, instead of attributing those assignments to a technological glitch to the network work method. This is because clarity and openness will boost drivers' negative emotions or contrasting ideas about businesses that run digital channels. Our results are consistent with previous studies on suggestion networks where exposure has improved users' confidence and adopt suggestions [9]. This study also draws attention to new transparency implications that have gained little attention in previous studies on intelligent systems, i.e., the effect of transparency in algorithmic management and how to open algorithmic assignment leads to improved job strategies address limitations. Drivers who have a thorough understanding of the assignment algorithm can set up workarounds to prevent a less economical journey. In contrast, drivers who only have basic knowledge of proximity-based algorithmic assignment cannot do the same.

It was also discovered that being autonomous contractors on digital work platforms is a crucial factor in the network drivers' preference and stability, which leads to a lack of control over the algorithmic management of trip assignments. Another consideration is the lack of familiarity with such systems. For example, a driver who acts as a driver and a passenger likes a mechanism that allows him to view and select travel requests directly. He assumes that the algorithm is now managing the choices that he will make himself. This is understood as opposition to transition, which often poses versatile, ethical concerns regarding the trend of emerging technologies that are harmful to people's regulation for the sake of overall machine performance and the consequences of learning and growth while at work [10].

6.2 Integrating information support into the algorithm management design

Supply-demand management algorithms were initially developed to solve statistical optimization problems concerning non-human entities. In Bolt and Uber, however, they are used to inspire and regulate human behavior. This poses issues, as the supply-demand management algorithm does not consider the speed at which drivers run. Consistent with previous studies on a smart agent that sought to promote healthy behavior [5], the algorithm struggled to account for people's feelings of inequity towards higher prices and overlooked drivers' social and altruistic

motives. This highlights the importance of algorithmic management: (a) the speed and manner in which people work, (b) different forms of inspiration rather than just economic ones, and (c) the feelings people have about the choices that algorithms make. Also, some drivers did not trust the high-priced areas as they had more faith in their expertise. Transparency of how the surge priced region was computed in real-time could increase workers' trust in algorithmic knowledge.

6.3 Integrating data-driven performance evaluation into the algorithm management design

Using driver ratings and approval thresholds, businesses can test drivers on a wide scale. In particular, driver ratings may appear to be a valid assessment tool because customer loyalty is a significant indicator of service performance and human service provider efficiency. Using only the monitored output data in assessing staff, though, has uncovered several problems that may arise if one depends too heavily on quantified metrics without further analysis of their meanings and complexities. Consistent with previous studies on letter-grading schemes or numerical appraisal of teaching skills [11], several random variables beyond drivers' reach affect the way passengers rate drivers. The effectiveness and accuracy of the averaged group assessment, rather than the in-depth holistic review carried out by a human manager or peer, is also at issue. As P18 put it, "you are at the hands of unknown strangers, in [his other work] you are judged by people you meet." Our research also reveals the pitfalls of following a 5-star rating system shared with web goods, content, or business ratings for human employees. Drivers felt that passengers rated conservatively as they did in online reviews; however, interviews with passengers suggest that they are more lenient and positive than drivers think. This misunderstanding indicates that a 5-star ranking metaphor and a heading may have contributed to incorrect comparisons. Finally, the long-term motivational impact of the ranking is still at issue. As the driver ratings were weighted over several journeys, the effect of one positive or negative ride was reduced, and the drivers in our study were less susceptible to changes in their ratings until they were above the minimum threshold.

Effective management offers working procedures and enables improvisation in response to changes and exceptions [12]. On the other hand, task algorithms have penalized all driver rejections of assignments, even though individual drivers had valid motives and situations for doing so. While we have not seen any significant problems with this lack of versatility in our algorithmic analysis assignment, it poses an open challenge in building flexibility in algorithmic management.

An examination is optional in most online rating programs, and many even miss the process. In the ride-sharing service, both riders were urged to score their service experience, and most of them did. Being held responsible for all communications, the drivers were well aware of this external assessment's nature. Trying to offer adequate care with all customer encounters could pose psychological stress to staff. Besides, as comprehensive research on extrinsic incentives' effect on intrinsic motivation indicates, an external device may undermine the innate incentive drivers may have and alter the sense they assign to their behavior. From the passengers' point of view, the uncertainty of the provider's motivation for friendliness and good service risks making the provider's relationship more superficial and perfunctory.

6.4 Designing algorithmic management that supports online forum

Our study found that online forums have been the primary place where drivers socialize, ask questions about each other, and share information and strategies.

In most research on intelligent systems' sensory and mental models, the focus was on individual sensemaking [13–15]. Our research indicates that social sensemaking is another critical task that needs to be correctly understood and endorsed if intelligent systems are effectively implemented. Social sensemaking events at the driver's forums adopted "fragmented social sensemaking" [10]. Many involved contributors have no overarching authority to put together various thoughts and narratives into a cohesive plot. This kind of sensemaking was useful in addressing rating enhancement techniques. There were no accurate or incorrect responses, and employees' knowledge and learned and improvised techniques played a critical role. On the other hand, fractured social sensemaking fell short on topics where only an authority figure had the correct details. This highlights possibilities for creating organized online social sensemaking algorithmic features where individuals can draw on each other's expertise.

7. Scope of the study

As with many research studies, there are certain drawbacks to this study. Our research work's findings are derived from interviews with a sample of drivers from three cities in South Africa, namely Johannesburg, Pretoria, and Durban. We have used the study of archival records. We were unable to perform interviews with the official members or creators of both Uber and Bolt. The organizations that run and maintain the platform's work processes were against their organizations' policies.

Consequently, we conclude that this work's results should be complemented by potential studies that will use various research techniques, such as tests, surveys, and ethnography. This study was performed in the context of the on-demand travel order, which is intended to improve the provision of the future of employment. We also assume that more analysis is needed in various institutional ways, such as with full-time workers.

8. Conclusions

Computer algorithms rapidly assign, refine, and evaluate work. This article discussed the effect of this algorithmic, data-driven management on Uber and Bolt's new ride-sharing services. This study's qualitative research results illustrated possibilities and difficulties in the architecture of human-centered algorithmic job assignment, knowledge and assessment, and the importance of fostering social sensemaking around the algorithmic method. The implications for HCI, CSCW, and Artificial Intelligent Systems research were discussed. We hope that this study will stimulate future work so that we can empower human workers to work with intelligent machines not only in an accurate but also in a rewarding and meaningful way.

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Author details

Olalekan Samuel Ogunleye* and Billy Mathias Kalema
Department of Informatics, Faculty of ICT, Tshwane University of Technology,
South Africa

*Address all correspondence to: olalekan@olalekansamuel.com

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References

- [1] J. Berg, M. Furrer, E. Harmon, U. Rani, and M. S. Silberman, "Digital labour platforms and the future of work: Towards decent work in the online world," NY, USA 2018.
- [2] Bolt. (2019, July 5th). *Improving Your Ratings*. Available: <https://support.taxify.eu/hc/en-us/articles/115003396994-Improving-Your-Ratings>
- [3] Braga M, Paccagnella M, Pellizzari M. Evaluating students' evaluations of professors. *Economics of Education Review*. 2014;**41**:71-88
- [4] J. Burston, D. Nick, and H. Alison, "Digital labour: Workers, authors, citizens," in *Digital Labour: Workers, Authors, Citizens*, ed: Ephemera: Theory & Politics in Organization, 2010.
- [5] L. Christian, K. Scott, ., K. Purcell, and A. Smith, "Assessing the Cell Phone Challenge to Survey Research in 2010," ed. Washington, DC: Pew Research Center, 2010.
- [6] E. Costanza, J. E. Fischer, J. A. Colley, and N. R. Jennings, "Doing the laundry with agents: a field trial of a future smart energy system in the home," in *CHI*, 2014, pp. 813-822.
- [7] S. Maitlis, "The social processes of organizational sensemaking" *Academy of Management Journal*, vol. 48, pp. 21-49, 2005.
- [8] H. Mintzberg, *The Nature of Managerial Work*: Harpercollins College Div, 1973.
- [9] Mutlu B, Forlizzi J. Robots in organizations: The role of workflow, social, and environmental factors in human-robot interaction. In: *HRI*. 2008. pp. 287-294
- [10] N. Srnicek, *Platform Capitalism*: Hoboken, 2016.
- [11] Newell S, Marabelli M. Strategic opportunities (and challenges) of algorithmic decision-making: A call for action on the long-term societal effects of 'datification'. *The Journal of Strategic Information Systems*. 2015;**24**:3-14
- [12] Vallas SP. Platform capitalism: What's at stake for workers? *New Labor Forum*. 2019;**28**:48-59
- [13] Y. Rayoung and W. N. Mark, "Learning from a Learning Thermostat: Lessons for Intelligent Systems for the Home," in *UbiComp 2013*, Zurich, Switzerland, 2013, pp. 93-102.
- [14] Schneider D, Kristen H. Consequences of routine work-schedule instability for worker health and well-being. *American Sociological Review*. 2019;**84**:82-114
- [15] Todd K., Simone S., Margaret B., and I. K., "Tell me more: The Effects of Mental Model Soundness on Personalizing an Intelligent Agent," in *CHI 2012*, Austin, Texas, USA, 2012, pp. 1-10.