

The Future of Work(ers) Research Project  
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'My boss, the app':  
Algorithmic  
management and labour  
process in delivery  
platforms in Colombia

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The Southern Centre for Inequality Studies (SCIS) is the first research institute of its kind in the global South. It draws on the intellectual resources of the University of the Witwatersrand and partner institutions in South Africa and beyond, to host an interdisciplinary research and policy project focused on understanding and addressing inequality in the global South.

The Future of Work(ers) Research Project explores how digital technologies are reshaping the world of work and the impact of these changes on inequality. It conceives of the development and application of digital technologies as a contested terrain. It is particularly interested in how collectives of workers are shaping which digital technologies are developed, how and to what end; and the economic and social policies that have been leveraged in response.

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## Abstract:

*Work and the activities and technologies that allow any work to be performed seem to be given issues in contemporary modern market-capitalist economies. However such issues are in motion within evolving patterns of governance and organisational arrangements. This paper analyses the impact of algorithms in the working conditions of platform workers in Colombia. We explore the extent to which digital tools and algorithmic management have been used to allocate, monitor and evaluate work in different sectors of the gig economy: couriers (food delivery), transportation (drivers) and domestic work. Drawing on Science and Technology Studies (STS), recent work on the sociology of algorithms, and Organisation Studies, this project analyses the digital devices that shape the labour process and the emerging practices of resistance or compliance that emerge from these interactions amongst workers. This paper builds on our previous work around decent work and working conditions of platform workers, focusing on the human-machine configurations that emerge from the material-semiotic connections between workers and algorithms. We approach the platform's algorithms from the black-boxed narratives of managers and companies to the embodied accounts of the workers who deal with them. In this paper we explore algorithmic management and the relationships that emerge in the human-machine interaction mediated by app-centred work, focusing on digital delivery platforms. Delivery work offers an opportunity to address the material configurations that sustain the digital economy, the ecologies that emerge in the streets, the workers' embodied experience and the digital infrastructure. This paper also explores the ways in which algorithms produce new configurations of inequality in the labour process.*

**Key words:** Algorithms, platform economy, labour process, algorithmic management

## Introduction

The development and expansion of digital platforms in Latin America is sustained by the material and historic inequalities of its urban economies. In Colombia, platforms have thrived in a country marked by income inequality, high urban population density, weak transport infrastructure and growing digital coverage among the population, producing business models fed by the intersection between the informality of working relations and digital surveillance (Sanchez et al., 2022). In addition, the forced migration of thousands of young Venezuelans to other South American countries has provided a “pool” of available workers who find in digital platforms a way of making a living in a country with few working opportunities, high unemployment and a huge informal economy – 40% of GDP (IMF, 2018).

The most important digital delivery platform in Colombia, in size and political influence, is Rappi, with approximately 25 000 associated workers just in Colombia. However, other digital platforms have surged in the past ten years in a wide variety of services, ranging from transport (Uber, Didi, Cabify, Beat), food delivery and urban delivery (Rappi, Domicilios.com, Uber Eats, Mensajeros Urbanos) to housework (HogarU, Tualy, Home & Care) and professional services, including healthcare (1Doc3). During the Covid-19 pandemic, Colombians experienced early and prolonged lockdowns (mostly in the biggest cities, such as Bogotá, Medellín, Cali and Baranquilla). Digital platforms became essential services in the supply of food and medicines to the urban middle classes who could afford working from home.

The contextual and structural inequalities that configure the digital economy are reproduced and materialised in regulatory and algorithmic domains. Not only are algorithms at the centre of the business model promoted by digital platforms – synchronising supply and demand of services and calculating prices according to demand, distance and rating – but also they are increasingly used for governing and managing the human resources of gig work. AI (artificial intelligence)-based chats and call centres are the most common way of interacting with the company, solving problems and receiving complaints. As Kenny and Webster (2021) have noted, a focus on how work is organised via the platform, with particular attention to surveillance as control, and also on how workers have circumvented these mechanisms to resist collectively, allow us to grasp new forms of inequality in labour.

In this paper we explore some of the platforms’ algorithms by focusing on the interface called the app, the applications that are installed in smartphones through which human-machine interactions occur. With this goal, we collected and analysed different kinds of materials, from the black-boxed narratives of managers and companies to the embodied accounts of the workers who deal with them. In this text, we have focused on delivery platforms

because they offer an opportunity to address the material configurations of the labour process that sustain the digital economy, the ecologies that emerge in the streets, the workers' embodied experience and the digital infrastructure. In what follows, we survey briefly some literature about gig work, digital platforms, social studies of algorithms and the labour process. Then we discuss the methodological strategy developed to analyse apps and algorithms. Finally we present various examples that illustrate the ways in which the experience of work is reconfigured by the interaction with algorithms in terms of management of workers' performance and as embodied experience.

## **Algorithms, labour and digital platforms**

The new forms of labour that emerge from digital platforms have become a matter of concern for regulators and a matter of interest for researchers. Some works have noted that digital platforms are often analysed in terms of the cooperative economy, the sharing economy, the peer-to-peer economy or as virtual infrastructures. Platforms do not only organise material exchanges but also immaterial ones, introducing new forms of participation and rating among the agents of economic transactions.

Platform workers in the global South experience even more precarious situations than their peers in the North; in addition to risky working conditions and algorithmic workplace monitoring, they suffer further constraints to their autonomy and bargaining power related to weaker institutions and threats to their attempts to organise. As Anwar and Graham (2020) have noted, despite the apparently fewer opportunities that gig workers in the Global South may have to exert agency in a context noted for the high proportion of the economy that is informal and a lack of employment opportunities in local labour markets, they develop diverse everyday resilience, reworking and resistance practices (Anwar & Graham, 2020).

However, the key element that makes platform and digital work different is the algorithms. These computational, mathematical or logical entities are ubiquitous, mediating the relations that constitute the markets (supply and demand) but also those external to markets such as information and the relation with other resources, including human. "Apps and algorithms are at the centre in the reshaping of work and market relations in the gig economy. They perform the intermediation by integrating reviews, rating systems, global positioning systems (GPS) and electronic payment systems" (Sánchez et al., 2022).

Different authors have noted the unique position of digital platforms in manipulating the markets in which they participate (Kamdar, 2016; Koutsimpogiorgos et al., 2020; Van Doorn & Badger, 2020). They control matching supply with demand, raising concerns amongst some actors about their governance and state regulation, including matters such as monopolies, algorithmic discrimination, privacy and the lack of transparency. Digital platforms have

put algorithms at the centre of their claims of value and business models. They are regarded as techno-legal innovations that create new categories, redefining traditional conceptions around work, contracts and, most importantly, the definition of what constitutes an employee and an employer (Kamdar, 2016). Platforms rely on algorithms to coordinate the service they seek to mediate. This line of research calls attention to “decoding the workings of obtuse algorithms at the heart of software systems” (Mackenzie, 2010: 1284) especially when algorithms have presence in operational logistics that organise offline and online settings (Mackenzie, 2010). Mackenzie argues that the materiality of infrastructure (in this case, sustained by algorithms) needs to be brought to light in the analysis to trace how algorithms are entangled with other forms of control. Digital work couriers are connected with experiences far beyond where the mediation is supposed to go: politics, employment, migration. Materiality here is not understood as a dead matter, but actively shaped, actively shaping, acting upon the couriers’ lives.

Digital platforms control all the aspects of the transactions, such as matching, contracting, pricing and evaluation through timing, ratings and reviews. These elements feed algorithms and data analytics tools developed to optimise all the process. These elements, for the platforms, justify the “special status” of the gig economy in terms of regulation. Gig companies have insisted that the key issue at stake is the classification of an online platform as economic activity. As terms and conditions for both workers and customers state, digital platforms define themselves as online intermediation services or “technology companies”, despite centring their business on reconfiguring specific markets such as transport, food delivery, finance and care, amongst others.

A recent report published by the Institute for the Future of Work, an independent think-tank based in the UK, has coined the term “gigification” to describe the increasing impact of algorithms and platforms in the shaping, reorganisation and reconfiguration of work. The impact of digital platforms on the labour process varies in complexity from offering traditional management functions to advisory and predictive functions. Almost all offer and promise to managers the monitoring of the workforce through a range of data gathering technologies which feed information to the platform. Gilbert and Thomas identify the following functions: “a) instructing what and how tasks should be undertaken, to ensure compliance with standards and procedure; b) scheduling and sequencing of tasks for workers; c) monitoring, recording and evaluating worker activity, which may be through the worker directly inputting the information through surveillance hardware; d) providing reports on task completion, which may include predictions and proposed actions” (Gilbert & Thomas, 2021: 10).

It is clear that such functions are at the centre of gig work. However, beyond this sector, algorithms are colonising work in other realms. The key issue here is the reorganisation of work based on the human data cycle frame, a circular process of information gathering, standardisation and behaviour change.

However, as Wood (2021) warns, it is important to understand the impact of algorithms on work as a process, with different levels of engagement with the technology and different scenarios of human and algorithmic agency. Drawing on discussions about ethics and automation in the case of self-driving cars, Wood establishes a difference between algorithmic assistance and algorithmic management.

This framework also highlights that the difference between the partial automation of managerial functions and algorithmic management is that algorithmic management entails automated systems that simultaneously direct, evaluate and discipline the workforce; limiting the role of managers in these areas to responding appropriately to system requests for intervention. (Wood, 2021: 12)

A key contribution of this framework is the identification of three functions that concretise the effect of algorithms on work: direction, evaluation and discipline. In fully developed algorithmic management, these functions are exerted without needing human managers to intervene. When concrete cases are examined, it is clear that labour management on digital platforms integrates with different intensity algorithms for specific tasks and problems. In the extreme case of automation, human agency is almost erased from the decision making process, and “it would be impossible for a human manager to intervene in an algorithmic decision even if they wanted to” (Wood, 2021: 12). However, as Wood warns, such full automation is an ideal type of algorithmic management, but it remains a desirable pursuit for managers and designers. As Popan (2020) has noted, “the algorithmically managed mobilities of gig workers herald a new age of automatisations, flexibility and job opportunities”. However, as Rosenblat (2018) warns, it is key to unpack the changing nature of work under algorithmic management, “understood as a set of procedures of control exercised by these platforms, which reflect the use of extensive data collection to feed algorithms that structure work” (Rosenblat, 2018, quoted by Popan, 2020: 242).

On the other hand, digital platforms can be understood as techno-legal networks that encompass the material infrastructure that allows their operation, the legal binding with workers and users through the interface app, and a broader regulatory environment that protects their operation and business model, set in the assetisation of information (Van Doorn & Badger, 2020). “The interface provided by platforms between customers and workers and between different realms of economic activity is part of the techno-legal networks that sustain platform business models” (Sanchez et al., 2022). This is a heterogeneous assemblage of regulation, specific contracts, information technologies (such as GPS), and formal/informal economies that are entangled in the platform

However, beyond automation, it is important not to forget that algorithms depend on human labour that is intentionally obscured, with a promise that dependency on it would eventually be eliminated (Aloisi & Stefano, 2022). As Burrell and Fourcade (2021) have noted, algorithmic management affects not only the relationship between managers and workers but also amongst workers: “Platforms magnify the competition among workers, by metrics and technologies of evaluation that facilitate constant benchmark[ing]” (Burrell & Fourcade, 2021: 223). The resulting precarity in the experience of work leads to suffering. “Workers experience algorithmic cruelty in the form of sudden reversals of fortune caused by changing algorithmic rules or the crossing of a perilous threshold” (Gray & Suri, 2019 cited in Burrell & Fourcade, 2021: 230).

## **Labour process and the gig economy**

In this context, a dialogue between Science and Technology Studies (STS) and sociology of labour can be very productive. Sociology has warned about the importance of considering labour as a process, a dynamic relation among work, workplace, workers, managers, technology and capital. The labour process theory surged in the late 1970s as a development of the Marxist theory of labour (Knights & Willmott, 1990). As Burawoy (1979) has noted, labour process theory was initially interested in unpacking, in industrial settings, the relationships between the employer, who owns the means of production, and the worker as the possessor of labour power. The interaction between each in the workplace sets in motion the labour process, “conceived of as the process of transformation of labour power in[to] a commodity according to set relations of production” (Burawoy, 1979). Such an approach has resulted in analysing labour beyond a focus on exploitation, to address matters such as autonomy, control and consent within industrial capitalism, rendering visible themes such as the logics of the “degradation of skills” as a key feature of capital accumulation (Knights & Willmott, 1990).

Labour process theory highlights the “function” of labour in capital accumulation in the workplace (the point of production), the role of skills in this process and the logics of control of the labour process as a key precondition for the transformation of workers’ labour into a commodity or service. These sensibilities have moved the analysis beyond a mechanistic antagonism between labour and capital at the point of production, to a focus on autonomy, consent and resistance at work (Gandini, 2019). Gandini notes that gig work platforms constitute a very particular point of production. “Platforms repurpose and fence off the social relations involved in gig work, and hereby transform them into relations of production” (Gandini, 2019: 1041).

A digitally based point of production becomes the scenario in which the labour process occurs. A dialogue between STS and labour process theory can be fruitful for understanding the particularities of digital technologies’

effects on workers' experiences. As Gandini has noted, a set of technologies and digital artefacts such as feedback, reviews and rating systems are reshaping the labour process – both managers' control strategies and workers' resistance and compliance. A focus on algorithmic management in the labour process shows digital platforms' double role as market intermediary and shadow employer. "At the same time, they help conceive more clearly of gig workers not simply as users of a digital medium but as 'actual' workers subjected to a capital–labour relation, and consider them accordingly" (Gandini, 2019: 1041).

An important phenomenon that digital technologies have intensified within the labour process is gamification. Labour scholars such as Michael Burawoy have warned about the role of competition and incentives associated with an organisation of certain activities at work in terms of games (Burawoy, 1979) to engage workers with work. Digital platforms have gone beyond this, translating control and monitoring strategies into the language of games and digital gaming. Burawoy describes "the game" as the tactics developed by workers to manipulate the production process in order to obtain different material and symbolic rewards. This gives purpose to the routine. In a similar fashion to the levels of a video game, workers need to overcome a series of different challenges in order to beat the game. The use of gamification in digital platforms is slightly different, because the workers' tactics have been appropriated by technology designers and managers as part of the platform itself. As Sarah Mason (2019) has noted, gamification is "the Silicon Valley buzzword du jour" (Mason, 2019: 1). Gamification has involved the strategic use of game elements such as point scoring, levels, competition with others, measurable evidence of accomplishment, ratings and rules of play in non-game contexts. One of the key features of gamification is the involvement and manipulation of emotions and embodied rewards as tools of manipulation and control. As Mason notes,

games deliver an instantaneous, visceral experience of success and reward, and they are increasingly used in the workplace to promote emotional engagement with the work process, increase workers' psychological investment in completing otherwise uninspiring tasks, and to influence, or "nudge," workers' behaviour. (Mason, 2019: 1)

Gamification also contributes to reducing tensions and perceived conflicts with managers, and is useful to redirect "conflict away from capital, as workers become consumed with the more urgent task of beating the game" (Mason, 2019).

Tech companies and platforms have been accused of developing addictive interfaces and games to increase engagement of workers with tasks based on experiential gratification rather than payment or other material benefits from performance. Unpredictability is a key consequence of gamification of the labour process. As Mason notes, "unpredictability is addictive: behavioural psychologists have long understood that gambling uses variable

reinforcement schedules – unpredictable intervals of uncertainty, anticipation and feedback – to condition players into playing just one more round’ (Mason, 2019). Authors such as Alex Rosenblat and Luke Stark (2016) and Mason (2019) have documented the effects of gamification in the labour process on digital platforms. These works have highlighted the asymmetries between the platforms’ operations, empowered by algorithms, and workers’ tactics to navigate digitally produced points of production and to make sense of their activities.

In this paper, we approach the impact of algorithmic management on labour process and work practices mediated and reconfigured by digital platforms. We focus on digital platforms as data infrastructures powered by algorithms and the human-machine interaction that occurs when the workers meet the apps to develop their work. Specifically we trace the effects of algorithms in three realms of practice (direction, evaluation and discipline of work) in the case of delivery. This paper explores the impact of algorithms on the working conditions of platform workers in Colombia. We aim to explore the extent to which digital tools and algorithmic management have been used to allocate, monitor and evaluate delivery work. We ask specifically about the ways in which the data and the calculative practices at the centre of algorithms configure working dynamics, identities and affect amongst workers in connection with time, locations and intensity of their work and its reward. The experience of workers with algorithms is embodied and material; therefore it should be addressed from an intersectional perspective, taking into account race, nationality, class and gender relations. Before discussing concrete cases and examples of algorithmic management, we will expand on the methodological strategy developed to grasp algorithms and their effects on work and workers.

## **Methodology**

As Seaver (2017) has noted, the elusive nature of algorithms, often black-boxed in proprietary code, demands the development of research strategies based on the multiplicity of their enactments. This methodological approach could be called an ethnographic assemblage (Seaver, 2017) that involves following the imaginaries produced by companies around algorithms and the effects of these calculative and data artefacts on workers’ bodies and their working conditions.

Our methodological assemblage is organised in two areas: first, we make a distant reading of imaginaries and narratives around the algorithmic management of the selected platforms. This analysis is centred on workers reviews on Google Play about the performance and problems they experienced with the platform and the app as

mediation. We conducted a web-scraping<sup>1</sup> from Google Play of platforms operating in Colombia, to collect and analyse reviews to identify key narratives around the interaction with the platforms. This exploration is complemented by analysis of narratives around algorithms and the app itself, developed by the companies in promotional materials. Second, in the context of the project Fairwork Colombia, we interviewed 30 platform workers in food delivery service to learn about the ways in which they perceive algorithms' operation and the ways in which these artefacts affect their working conditions. We are particularly interested in unveiling the power of metrics and how the time-related activities of working for the platforms make the workers feel (anxious, sad and so on) and what actions follow (such as speeding, waiting around). Finally, we developed a visual and discursive analysis of the platforms from the perspective of the apps and the digital tools that organise and control workers' work and performance. Although the code at the core of the algorithms remains out of reach, we can analyse algorithms by their effects on work and through the interfaces developed to interact with workers and customers. We analyse workers' interactions with the app in the context of the interviews. The reflections of Wajcman (2016) on time are pertinent to analysing algorithms. They are as much a cultural artefact as a technological one. "In other words, once we make the STS move towards conceiving of technology as a socio-material practice, and agency as emerging from human machine networks – it follows that time practices are also socio-material. We understand time with and through machines" (Wajcman, 2016: 194)

Here, we present a preliminary exploration from this work. For this paper, we have summarised the distant reading of Google Play reviews on Rappi (a key food delivery platform in Colombia and in Latin America) and focuses on analysing workers' experiences as reported in interviews. We gathered data from reviews in order to survey workers' problems with algorithmic management at Rappi. Four major points of antagonism between workers and the platform emerged: low payment, logistics, communication and support, and customer relationships. We identified these major themes using distant reading of 126 800 reviews. These topics frame a close reading of the reviews' content. We analyse the narratives of reviews that exemplify those four antagonisms and compare them with the accounts of workers we interviewed about how they experience algorithmic management to grasp its impact on the labour process.

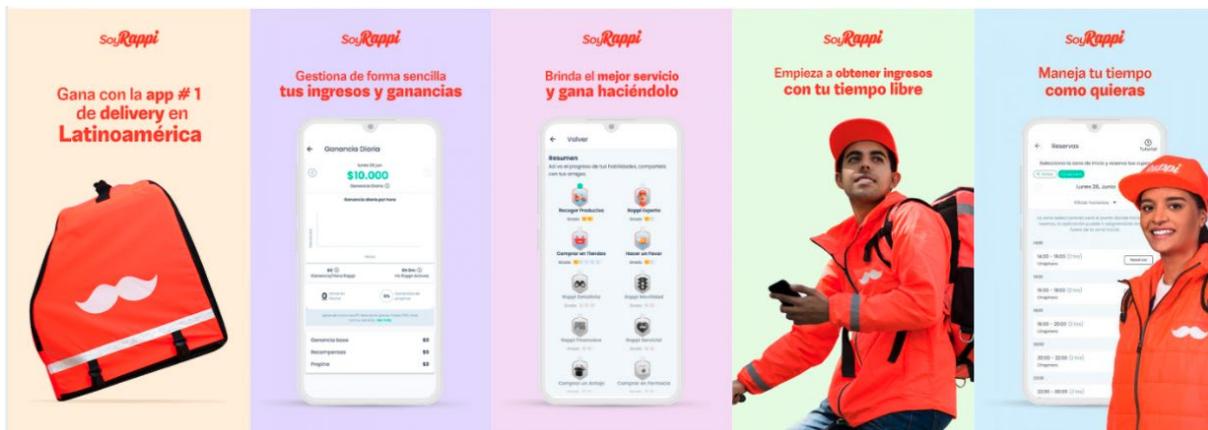
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<sup>1</sup> Web-scraping involves extracting data and content from a web page using coded script.

## The app as centre of the platform work

Rappi introduces itself as an “on-demand delivery startup” active in Mexico, Costa Rica, Colombia, Peru, Ecuador, Chile, Argentina, Uruguay and Brazil. It was founded in 2015 by the Colombian entrepreneurs Felipe Villamarin, Sebastián Mejía and Simón Borrero, with an initial investment of \$2 million. Three years later, the company has raised more than \$200 million in funding. It has 1500 direct employees and more than 25 000 associated delivery workers, known as Rappitenderos (Rappi, 2019). Since last year some of those “associates” have been taking to the streets to protest against the precarious working conditions of delivery work, such as long working hours, large distances, fixed tariffs which have decreased incomes, constant blocking from the platforms, constant scrutiny from external (police) and internal security employees (Rappi brigadistas), safety problems and the lack of basic social security. These public demonstrations increased through the lockdowns. Moreover, a movement was formed which led the protests, Movimiento Nacional de Repartidores de las Plataformas Digitales. However, Rappi has been widely celebrated as an example of local innovation, young entrepreneurship and the promise of the digital economy by media and politicians (Sanchez et al., 2022).

**Image 1. Banner presentation of Soy Rappi (application interface developed for delivery workers)**



From left to right: “Earn money with the No 1 App for delivery in Latin America.” “Manage your income and profits easily.” “Provide the best service and earn money.” “Start obtaining an income in your free time.” “Manage your time as you want.”

Rappi has developed different application interfaces (apps) to interact and manage its relationships with customers (Rappi App), restaurants and businesses (Rappi Aliado), shoppers (workers collecting and organising goods for delivery at supermarkets), and delivery workers (Soy Rappi), as well as an app providing data analytics for business (Rappi Partners). In this analysis we focus on Soy Rappi (Image 1) and the interactions between the app and delivery workers.

We have developed a web-scraping of Google Play to capture reviews and the rating of the app by users. The scraping was done using the library Selenium, based in Python. In the case of Soy Rappi we collected 126 800 reviews, which correspond to 36% of the total reviews of the app (scraping date limit 30 June 2021). These reviews are full of references to the interactions between the platform and the workers, and they constitute a source to identify narratives that emerged from the ratings systems that the platform has created and that are at the centre of their operation. A random exploration of these reviews shows different opinions. Many of these are very positive regarding the platform as a source of income (Image 4), but many others use the review to complain about risks, low payment and problems in the performance of the platform that makes their work difficult

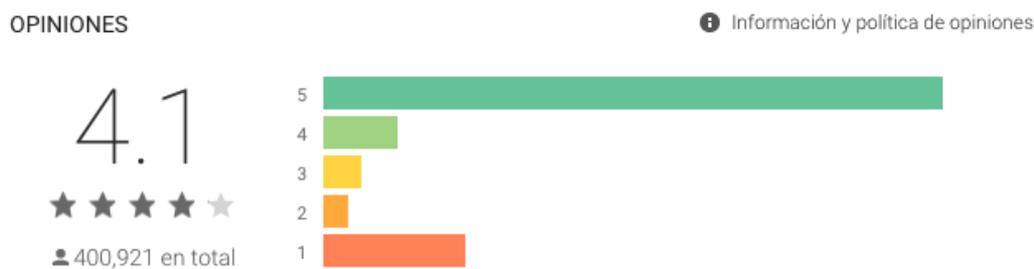
**Image 2. Screenshot of Soy Rappi on Google Play: 400 000 downloads and 4 stars average review**



**Disfruta de ganar dinero y tener la oportunidad de manejar tu tiempo desde la app favorita de todos. ¡Vuélvete un aliado Rappi!**

Como Rappitendero, tienes la oportunidad de ser el repartidor de los pedidos que recibes a través de la app, además:

**Image 3. Users' ratings of Soy Rappi on Google Play: 400 921 downloads and 4.1 stars average review**



**Image 4. Examples of users' reviews of Soy Rappi on Google Play**

**jhosert sanchez**  
★★★★★ 30 de septiembre de 2021

Excelente empleo y fuente de ingreso y tiempo disponible 🙌🙌🙌🙌 aumento de pedidos e incentivos semanal.y seguiremos aumentand alabanzas alabanzas si si si ta bien rappi si-gue mandando opina opina deja trabajar por favor ya opine

**Julio Tovar**  
★★★★★ 4 de octubre de 2021

Exelente herramienta de trabajo para los venezolanos en el mundo pero deben pagar mejor todos los días exponemos nuestras vidas en estas grandes ciudades ultimamente se estan pasando de gamines con los pagos y no tenemos seguro y muchos he sido victimas de accidentes y atracos y rappi no reconoce eso deberian tomar cartas en el asunto

**Fernando Montero**  
★★★★★ 11 de noviembre de 2021

Super buena pagan bien y las ordenes siempre están listas

Review 1. Excellent source of employment and income source and available time. Increase in orders and incentives every week. The blessings will continue coming... Yeah it is fine... It still says “review” and I have already given my opinion, please let me work.

Review 2. Excellent tool for working for the Venezuelan around the World but you should pay better. Every day we put our lives in danger in these big cities and lately (Rappi) has been abused (Gamines, slang) with the payments and we don't have insurance and many of us have been victims of accidents and robbery. Rappi does not recognise this, they should do something.

Review 3. Super good, pay well and the orders are always ready.

### Corpus analysis, a distant reading of rating systems

We approached this amount of information by doing a distant reading, using basic corpus analysis techniques. We processed the reviews using Voyant tools. This corpus has one document with 1 317 293 words in total and 36 273 unique word forms. The vocabulary density was 0.028 and the average number of words a sentence was 43.9. The word cloud in Image 5 summarises the most frequent terms (words), organised according to their frequency and their syntactic proximity.





work the hours that they decide according to their own time and resources. In practice, however, such promises are rarely fulfilled. In fact, workers complain about low payment and opaque pricing. Platforms such as Rappi have pushed workers to accept orders without knowing important details such as price and distance, as noted in the following review:

<p><i>“No me interesa si daño mi cuenta o me inhabilitan, no pienso hacer sus pedidos malpagados de 20 pesos 3km, no proteste cuando los bajaron a \$35 puesto que aún se me hacía justo pero ahora se empeñan en mandar pedidos de ganancia baja por distancias largas. Si van a pagar eso mejor búsqense otros repartidores que les guste esto, si fuera uber lo aceptaría pero lo que hacemos va más aya de un simple servicio de reparto y que no se nos valore pese a que nosotros hacemos rappi realmente desmotiviva.”</i> 6 June 2021. Florian C.</p>	<p>“I don’t care if it damages my account or if they (Rappi) block me, but I don’t want to take bad orders, 20 pesos per 3km. I did not complain when they lowered the tariff to \$35 [35 pesos] because it was still fair but they are puffing low cost orders up for long distances. If they are going to pay that, better they should look for other people who like that. If it was Uber it would be alright but we work beyond the delivery. Although we are Rappi, we are not respected, This is very disappointing” 6 June 2021. Florian C.</p>
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## Orders and logistics

Another key element of algorithmic management and the control of platforms over the labour process is related to the production of a digitally mediated point of production. This means that the platform constructs the place at which work occurs through the reshaping of existing places and the creation of a workplace enacted by the app and digital devices that support the material work of delivery. Platforms centred their business operations in the mediation of supply and demand, and in the smart tuning of associated elements such as information about menus, stocks of goods, preparation time and delivery estimates. Platforms create a set of metrics from these elements and workers’ activities to optimise logistics and increase the overall value. However, when these infrastructures break, workers suffer the consequences. Cancelled orders mean time lost for workers and lost income, and also, in many cases, they are the cause of blocks and penalties managed by the platform.

<p><i>“Desafortunadamente no contamos con soporte como debe de ser. Anteriormente le había dado una calificación de 5 estrellas Y mi experiencia había sido Bastante buena. Desafortunadamente me han cancelado el día de ayer dos pedidos. Uno de ellos el restaurante estaba cerrado, el cual no es mi culpa. El otro cancelado fue porque no había</i></p>	<p>Unfortunately we do not have support as it should be. I had previously given it a 5 star rating and my experience had been pretty good. Unfortunately, two orders were cancelled yesterday. One of them, the restaurant was closed, which is not my fault. The other cancelled was because there was no sale</p>
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<p><i>venta de alcohol Y el cliente decidió cancelar. Sin embargo hoy al querer trabajar me doy cuenta que rappi me ha castigado 16 horas Por inconvenientes en mi servicio” 30 April 2021.</i></p>	<p>of alcohol and the customer decided to cancel. However, today when I want to work, I realize that Rappi has penalised me 16 hours for inconveniences in my service. 30 April 2021.</p>
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## Communication with the platform

Algorithmic management is often is constructed on assumptions about workers’ performance that demand the design of surveillance systems. These systems can be very invasive, involving lack of transparency about data collected about workers, including biometrics and legal information. Despite this, many workers report a lack of communication channels with digital platforms, particularly in emergency situations. At the same time, the automation of the interactions with the platforms, based on natural language processing technologies, is making human-to-human interactions increasingly scarce. Workers complained about the lack of support and communication with managers and the platform; sometimes such silence puts their safety at risk, as noted in the following reviews:

<p><i>Bueno, les falta mejorar muchos detalles, como diligencia de soporte al momento del pedido. No existe. No solucionan problemas puntuales de los pedidos, eso es perentorio. Ya no contestan a través de soporte, pareciera que Rappi con la cuarentena boto a su personal. Tienen fallas de posicionamiento entre la dirección escrita y la ubicación en la app, por favor corrijan eso, porque no me quieren reconocer la distancia recorrida adicional.</i></p>	<p>Well, they need to improve many details, such as support diligence at the time of the order. Does not exist. They do not solve specific problems of the orders, that is peremptory. They no longer answer through support, it seems that Rappi, with the quarantine, kicked out their staff. They have positioning errors between the written address and the location in the app, please correct that, because they do not want to recognize the additional distance travelled.</p>
<p><i>Últimamente es un desastre, se tilda en los pedidos, el GPS funciona mal. El sistema de reserva empeoró todo. Hoy sábado estuve desde las 18.30hs hasta las 21.30hs en palermo, con autoaceptación "de racha", todo en orden, pero en tres horas no recibí ni un pedido, nunca me pasó y menos un sábado. La comunicación con soporte es inútil, desinstale y reinicie el celular no sé cuántas veces, todo sigue igual.</i></p>	<p>Lately it’s been a disaster, it crashes on orders, the GPS malfunctions. The reservation system made everything worse. Today, Saturday, I was from 6:30p.m. to 9:30p.m. in Palermo, with auto-accept “on a streak”, everything in order, but in three hours I did not receive a single order, it [has] never happened to me, especially on a Saturday. Communication with support is useless, uninstall and restart the cell phone. I don’t know how many times, everything remains the same.</p>

## Customer relationships

Finally, workers complained in the reviews about customer relationships. Digital platforms such as Rappi feel relatively responsible and accountable to their customers, partly because consumer rights regulation affects them in a clearer fashion than any labour rights framework. During the labour process, delivery workers follow the orders and instructions of different “bosses”: the app, the customer and the restaurant. Each one provides specific goals and instructions according to their own interests. Customers demand specific tasks and have the power to rate the workers’ performance, affecting the overall score of the worker and even restricting future access to the platform. Restaurants have less formalised mechanisms of exerting control over the delivery but they can facilitate the work of the couriers or make it difficult by delaying food orders or even informally showing preference for specific workers.

<p><i>Doy 3 estrellas ya que es una empresa que da posibilidades de trabajo, a casi cualquiera, pero a cambio de esto hay DEMASIADO ACOSO LABORAL. Para que "El cliente tenga la razón" terminan explotando y muchas veces robando literalmente al empleado, ya que ellos nunca deben perder. Y si te quejas de algo así te suspenden sin derecho a réplicas. El soporte de Rappi es de adorno, son gente que cobra por no hacer nada ya que en su mayoría no trabajan eficientemente.</i></p>	<p>I give 3 stars since it is a company that gives job opportunities to almost anyone, but in exchange for this there is TOO MUCH LABOR HARASSMENT. So that “The client is right” they end up exploiting and often literally robbing the employee, since they should never lose. And if you complain about something like that, they suspend you without the right to reply. Rappi support is for decoration, they are people who get paid for doing nothing since most of them do not work efficiently.</p>
<p><i>Pésima aplicación, quieren que uno trabaje como esclavo con el sistema de racha además se roban lo que el cliente paga por el domicilio ya que al cliente le cobran 8000\$ por el domicilio y nos pagan 2500\$ cuando se supone que la ganancia sea del rappi fuera de eso si no estas en racha no te envían pedidos en todo el día esto está de mal en peor solo quieren ponernos a trabajar y no darnos lo que merecemos por el trabajo que hacemos.</i></p>	<p>Terrible application, they want one to work as a slave with the streak system, they also steal what the client pays for the address since the client is charged \$8,000 for the address and they pay us \$2,500 when the profit is supposed to be from the Rappi Apart from that, if you are not on a roll, they do not send you orders all day, this is from bad to worse, they just want to put us to work and not give us what we deserve for the work we do.</p>

The different problems described are examples of the impact of algorithmic management on the labour process. Many other reviews complained about the platform’s arbitrary blocking of workers’ accounts and the lowering of tariffs that directly affects workers’ income.

There is a key contradiction in the platform review system. On one hand it is supposed to be a key element of the claims of value of digital platforms. According to those behind its design and promotion, rating systems are open and democratised accountability infrastructures that show, in a clear and transparent way, the satisfaction of users with the platform. On the other hand, rating systems feed algorithms in order to optimise and improve the performance of the platform. The contradiction is related to workers' interaction with the platform. They are in a marginal position relative to the platform: it is not that easy just to switch to another option. The platform covers specific customers and parts of the city, but their complaints seem to have no effect on the platform. There are no replies or answers from the company in this medium. Additionally, there is some distrust of the ratings system amongst workers. This is perceived as part of the surveillance by the platform. There is a perception that a bad review can be traced by the platform and be punished by blocking the account.

## The digital reconfiguration of the labour process

Both distant and close readings of workers' reviews provide a general view of the main problems that affect workers' relationship with the app. Many of them are connected to algorithmic management. These accounts resonate with workers' narratives collected through interviews.

A close dialogue with delivery workers has taught us how algorithmic management takes place in practice, showing both the violence exerted on individuals but also its limitations and breaks. The following extract is part of an interview with a Rappi delivery worker based in Bogotá. The worker is referring to a strategy of delivery called "the Streak" or "la Racha": it consists of a chain of deliveries that are assigned one after other, with the goal of encouraging workers to use of the mode "auto-accept". The auto-accept mode has been very controversial amongst workers because it imposes orders on the workers without taking into account their disposition or location at the time.

E: Pues, también depende eso. A veces, el día que más hice, creo que me hice 19, pero así, o sea, cuando recién empezó lo de la **racha** que era uno tras de otro, uno tras de otro. Creo que es la vez que más órdenes me hice.

I: Ya, super pesado. Me puedes contar un poco qué es esto de la **racha**? Lo he escuchado mucho, pero quisiera que me profundizaras un poquito.

E: Eso es como una estrategia para que autoaceptemos, entonces nos ponen a hacer, en el estado mio que estoy en

E: Well, that also depends. Sometimes, the day I did the most, I think I did 19, but like that, that is, when the **streak** just started, it was one after another, one after another. I think it's the time that I made the most orders.

I: Yeah, super heavy. Can you tell me a little about what this **streak** is? I've heard it a lot, but I'd like you to elaborate a little bit.

E: That's like a strategy for us to auto-accept, so

<p><i>diamante, me ponen a hacer tres pedidos para entrar en racha. Eso quiere decir que voy a ser priorizada para que me suene el teléfono con más frecuencia.</i></p> <p><i>I: Um no, terrible, o sea, están obligados a tener eso activado, el autoaceptar.</i></p> <p><i>E: Claro, estoy obligada, por lo menos hay veces no rinde porque, si uno no tiene el botón de autoaceptar pues usted escoge lo que le llega. Pero, pues no llega nada porque yo intenté porque no me gusta trabajar autoaceptando, pero me hacía uno, máximo dos diarios. Y pues así quien vive, o sea, me tocó prender el autoaceptar, estoy obligada a autoaceptar para que me lleguen más órdenes entre comillas, porque hay veces también es duro, o sea, uno pasa y le pregunta a los compañeros ¿cómo van? Y no, Sali desde tales horas y estoy aquí sentado, otros dicen que no les ha sonado.</i></p> <p><i>Entrevista 8, Agosto 2021</i></p>	<p>they make us do, in my status that I'm in, diamond, they make me make three requests to get on a roll. That means I'm going to be prioritised to have my phone ring more often.</p> <p>I: Um no, terrible, I mean, you are forced to have that activated, the auto-acceptance.</p> <p>E: Sure, I'm obliged, at least there are times when it doesn't work because, if you don't have the auto-accept button, then you choose what comes to you. But, well, nothing comes because I tried, because I don't like to work auto-accepting, but I did one, maximum two daily. And so whoever lives, that is, I have to turn on the auto-accept, I am forced to auto-accept so that more orders come to me in quotes, because there are times it is also hard, that is, one passes and asks friends how are they doing? And no, I've been out since such hours and I'm sitting here, others say they haven't heard it.</p> <p>Interview 8, August 2021</p>
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The platform tries to nudge workers into more automated modes of management, looking for a more voluntary compliance with the algorithm. However, such a strategy is short lived ,and the management imposes auto-accepting on workers as the default mode, leaving little space for workers' decision and resistance. Workers complain that the “streak” is a trap: it operates in favour of the worker only to begin with, but then it only decides the routes, often between distant points, lowering the workers income.

If this situation exemplifies how rigid algorithm management can be, the next interaction is based on the faults and cracks of automation and algorithmic management, topics previously discussed in the reviews. In this case, we examine some of the invisible human work that feeds and sustains the digital infrastructure of the platform. In this case, a worker complained of the paperwork that he needed to fill and submit to the platform headquarters in order to update his vehicle information (from bike to motorbike). The worker not only found the paperwork that he faced to update digital information frustrating, but was shocked by the corruption of management.

*, yo lo puedo decir que Rappi se corrompió mucho. En qué sentido? En el sentido hasta internamente, hasta los operadores de la plataforma, que son los de soporte y esa gente, ellos colocan en facebook que hacen cambio de moto, que hacen cambio de vehículo, incluso yo cuando fui a hacer mi cambio de vehículo, yo tuve un problema allá en rappi, porque resulta y acontece que yo llevaba toda mi documentación legal porque es que yo he sido un hombre, gracias a dios y a mis valores y mis principios y porque mi familia me crio muy bien y me gusta hacer las cosas muy bien, o sea, a mi me habían ofrecido que yo pagara 80 mil pesos y me hacían cambio de vehículo, sin yo llevar papeles ni nada a rappi, solamente pagar, entonces dije no, yo llevo mis papeles, y yo fui a rappi, a llevar mis papeles y me dijeron que en ese momento esa opción no estaba habilitada para ahí, entonces yo formé un problema y solicité que me llamaran a la gerente y le dije a la gerente que por qué, le mostré los mensajes que yo tenía, que por qué pagando sí había la opción y yo estoy acá con mis papeles, con todos los documentos que exige el debido proceso, y no me hacen el cambio de vehículo, le dije. Entonces ellos ahí llamaron a su superior, no sé qué pasó ahí, después que yo hice todo ese problema, ahí sí me cambiaron la cuenta a moto.*

Entrevista 10, Septiembre de 2021

I can say that Rappi was corrupted a lot. In what sense? In the sense even internally, even the platform operators, who are the support ones and those people, they post on Facebook that they change motorcycles, that they change vehicles, even me when I went to change my vehicle, I had a problem there in Rappi, because it turned out that I had all my legal documentation because I have been a man, thank God and my values and my principles and because my family raised me very well and I like to do things very properly, that is, they had invited me to pay 80 thousand pesos and they would change my vehicle, without me taking papers or anything to Rappi, I just had to pay, so I said no, I took my papers, and I went to Rappi to take my papers and they told me that at that time that option was not enabled there, so I made a problem and asked them to call the manager and I told the manager, I showed her the messages that I had [received], why pay if there was the option, I came here with my papers, with all the documents required by due process, and they wouldn't change my vehicle, I told her. So they called their superior there, I don't know what happened there, after I did all that trouble, they did change my account to a motorcycle.

Interview 10, September 2021

After this exploration of the different enactments of algorithms and app interactions, it is important to highlight that algorithmic and automated management are key for understanding digital platforms' labour processes. This means that even in cases of the most radical automation, human agency keeps working the system, sometimes as invisible work, on other occasions as domination by some of the platform managers. In any case, algorithmic management is always partial and it is sustained by human labour.

## Discussion

In this paper we have analysed the impact of algorithmic management on the working conditions of delivery platform workers in Colombia. We have explored the extent to which digital tools and algorithmic management

have been used to allocate, monitor and evaluate work. We have illustrated some specific ways in which the data and the calculative practices at the centre of algorithms configure working dynamics, identities and affect amongst workers in connection with time, location and intensity of their work and its reward. The experience of workers with algorithms is embodied and material; in future work it will be important to address intersectionality.

It is important to keep in sight that these reflections are part of a bigger concern about the future of work and the ways in which different actors are envisioning it, specifically in Colombia. On one hand, the debates over gig-work, gig-economy and platform work, in many cases, have been sectorally oriented; they are essentially urban and centred on the digital and service economy. These reflections on gig work do not necessarily reflect the complexity of the multiple modes of work (remote, at home, mobile work, and so on) or other scenarios and dynamics of employment (rural/urban, formal/informal), or challenges Colombia has endured regarding issues such as the informal economy, internal and forced migration, low quality employment, high youth unemployment, and conflict and drug trafficking, mostly in rural areas in Colombia.

On the other hand, the narratives and representations about the future of work produced in the context of the gig economy have colonised the imaginations of politicians and managers in other sectors. We have witnessed how “the future of work” has gone from a thought or a provocative phrase to a political statement and a real matter of concern for politicians, unions, experts and the private sector. These actors have been heavily influenced by the future promised by digital platforms and algorithmic management: flexibility, control, low costs and rising profits. These imaginaries have been reproduced by local media, particularly by business press, who have kept the interest in such matters alive through opinion and news and by staging different public discussions about the future of work and the professions that will be required in a Fourth Industrial Revolution scenario.

In general, the imaginaries about the future of work supported by these actors (media, economics experts and technocrats) are optimistic, stating that economic growth and the jobs created by new technologies and markets will compensate for the loss of “traditional” jobs affected by automation, AI and the expansion of the digital economy. However, there are critical voices against such naive optimism. For instance, Escuela Nacional Sindical (a unions’ think-tank) has warned about the focus on big business in government policies and the lack of interest in the protection of work and its decency, quoting the concerns and reflections of the ILO. Other analysts note that the futures imagined for the Colombian economy and job creation do not take into account the current situation of the Colombian economy, marked by informality (40% of the economy is estimated to be informal) and chronic unemployment (there is a 11% unemployment rate).

Digital platforms have been managing the agenda of discussion about the future of work. They are shaping the debates, imposing a very specific way of understanding work that negates work itself. Digital platforms promote an agenda that refuses to recognise work as work, constructing a vocabulary that frames labour as commercial relations, the worker as an entrepreneur and the employer as mediator. In this paper we have explored accounts that reveal a completely different situation. Algorithmic management reconfigures the labour process, providing digital mediations that reinforce and create new situations of subordination and dependence from the worker to the platforms' algorithms and managers.

Platform workers in Colombia are organising collective action to render visible their status as workers and the responsibilities of digital platforms. Historically, in Colombia, the processes of social mobilisation of workers for their rights have been repressed with extreme violence by the State and illegal groups. Despite this unfavourable context, in recent years, various digital workers' rights collectives have emerged for the legal recognition of the rights of platform workers, and against the precarisation of their already difficult working conditions, such as the sanctions imposed by the platforms and their lack of recognition as formal workers.

During 2020 and in the context of Covid-19, protests by delivery platform workers were more frequent and, finally, the media and public opinion began to perceive the existence of the digital workers movement. Since March 2020, the greatest source of conflict has been the implementation of points-based systems (such as La Racha) developed by Rappi to force couriers to accept unprofitable orders and orders in distant or high-risk geographic locations under threat of being blocked by the platform or not being allowed to work the hours preferred by the delivery person<sup>2</sup>. The pandemic meant recognition for platform workers as essential workers, fundamental for the distribution of food and medicine during periods of confinement. This public recognition of the importance of this work has contrasted with the lack of forceful actions by the State and the platforms to improve their working conditions. While digital platforms have proclaimed algorithmic management as the model that will revolutionise the economy and all its sectors, workers' accounts show the limitations of this infrastructure and its consequences on their lives.

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<sup>2</sup> *El Tiempo*, Rappitenderos protestan por nuevas medidas en la aplicación, 2 March 2020.

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