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The "AI Mode": How Food Delivery Riders in the Netherlands and South Korea Experience Algorithmic Management

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Abstract

This study investigates the complex dynamics between algorithmic management and worker agency, focusing on food delivery riders in the Netherlands and South Korea. A combination of digital observation, semi-structured interviews, and personal work experience is utilised to examine how platforms like Thuisbezorgd, Uber Eats, Bamin, and Coupang Eats use algorithmic tools, penalties, and incentives, to control labour. Findings highlight that algorithmic management impacts riders' autonomy, income stability, safety, and working conditions, often creating dependency on the platform while restricting upward mobility. Riders exhibit diverse responses: younger part-time workers approach AI-driven systems with curiosity, while many full-time self-employed riders express frustration over diminished autonomy and precarious working conditions. Additionally, the study highlights the symbolic importance of features such as the "accept or decline" option, which provides riders with a semblance of autonomy and control. While these features are often more symbolic than substantive, they allow riders to construct a narrative of self-reliance and dignity within a system characterised by pervasive control. The research underscores the need to understand the intricate interplay between algorithmic management and worker agency in the platform economy.

Keywords: Food delivery platforms; Platform labour; Algorithmic management; Workers' experience; Netherlands; South Korea.

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1. Introduction.

This study examines the complex relationship between algorithmic management and worker agency among meal delivery riders, focusing on the relatively new technique of AI assignment – a fully automated delivery dispatch system encouraged by meal delivery platforms. The rise of platform-based food delivery services has accelerated the proliferation of gig work, where algorithmic management plays a central role in overseeing and controlling labour. Platforms often claim neutrality, presenting themselves as facilitators rather than employers.[1] However, growing evidence suggests these platforms exploit their classification of workers as "self-employed," creating a "legal liminality" that denies workers full employee protections while subjecting them to precarious working conditions and extended hours.[2] This dynamic is further complicated by the role of migrant labour in the gig economy.[3]

Algorithmic management leverages digital technologies to automate traditional management tasks such as planning, coordination, and evaluation, replacing human intervention with self-learning algorithms.[4] While this system enhances efficiency, it also intensifies labour control and diminishes workers' autonomy. For meal delivery riders, algorithmic management shapes not only their work processes but also their everyday experiences.

This study is significant because it addresses the dual nature of platform labour—its potential for opportunity and its inherent exploitative tendencies. By focusing on workers' agency, the research highlights how delivery riders navigate, resist, and reshape their working environments within the constraints of algorithmic management. Additionally, the research aims to examine the social and symbolic dimensions of delivery work, particularly how the low public image of food delivery as a job for unskilled or low-educated individuals impacts riders' perceptions of their work and their strategies for gaining respect and dignity.

Through an analysis of food delivery companies and riders in the Netherlands and South Korea, this research addresses two central questions:

1) How does algorithmic management affect meal delivery riders' work experience, and how do they respond to it?
2) How does the public image of food delivery work shape riders' responses to algorithmic management?

Using a combination of digital observation, semi-structured interviews, and first-hand experience as a delivery rider, this study investigates the interplay between algorithmic management and workers' agency, exploring both the tangible and symbolic dimensions of their responses.

[1] Gillespie T., *The politics of 'platforms'*, in *New Media & Society*, 12, 3, 2010, 347–364.
[2] Chun, J.J., *Legal liminality: The gender and labour politics of organising South Korea's irregular workforce*, in *Renewing international labour studies*, Routledge, London, 2013, 101–116; Kaine S., Josserand E., *The organisation and experience of work in the gig economy*, in *Journal of Industrial Relations*, 61, 4, 2019, 479–501.
[3] Van Doorn N., Vijay D., *Gig work as migrant work: The platformization of migration infrastructure*, in *Environment and Planning A: Economy and Space*, 56, 4, 2024, 1129–1149.
[4] Rosenblat A., Stark L., *Algorithmic labor and information asymmetries: A case study of Uber's drivers*, in *International Journal of Communication*, 10, 2016.

The paper starts with framing algorithmic management in relation to the Labour Process Theory (Section 2). It then explores the dynamics of delivery workers' dependency and agency in the platform economy (Section 3), with specific attention to case studies in the Netherlands and South Korea (Section 4). Following an explanation of the mixed-method approach employed in the research (Section 5), the paper continues with a discussion of the findings (Sections 6, 7 and 8). Finally, it concludes by addressing the two main research questions (Section 9).

2. Understanding Algorithmic Management through Labour Process Theory.

This section explores the application of Labour Process Theory (LPT) to algorithmic management of platform labour, focusing on the concept of control. Drawing on foundational work by Braverman, it examines how control mechanisms have evolved from industrial-era automation to contemporary algorithmic systems used in the gig economy.[5] The discussion situates algorithmic management as a modern framework for control, highlighting its parallels with historical management practices and its impact on worker autonomy and agency. By reviewing the implications for worker experience and resistance, this section critically explains the degradation and negotiation of labour in platform economies.

Labour Process Theory (LPT), first articulated by Harry Braverman,[6] has long served as a lens to examine the dynamics of labour control, skill utilisation, and wage determination in industrial contexts. At its core, LPT investigates the strategies employed by capital to dominate labour, making it an essential framework for analysing contemporary workplace dynamics. This review situates LPT within the context of algorithmic management in the platform economy, focusing specifically on the concept of control. By linking historical mechanisms of automation to modern algorithmic management practices, this analysis underscores how longstanding theories remain relevant in understanding the degradation of labour in the digital age.

Among other major concepts, control is central to all management systems and is foundational within LPT. Braverman argued that control manifests through mechanisms, such as job segmentation, task allocation, and automation, which ensure capital's dominance over labour.[7] The labour process begins with a contract that specifies the sale of labour power by workers and its acquisition by employers. This contract encodes control by dictating the conditions under which workers operate, effectively limiting their autonomy. In contemporary applications, control extends beyond traditional supervisory practices to more sophisticated mechanisms enabled by digital technology. As a modern embodiment of control, algorithmic management reshapes how capital exercises authority over labour. Its

[5] Braverman H., *Labor and monopoly capital: the degradation of work in the twentieth century*, Monthly Review Press, New York, 1974.
[6] *Ibidem.*
[7] *Ibidem.*

integration into the platform economy highlights the enduring relevance of Braverman's theories, even as the tools of management evolve.

Therefore, historical parallels between automation and the degradation of labour underscore how technological advancements continue to intensify managerial control and diminish worker autonomy. The concept of automation has deep roots in industrial-era management practices, where it was initially introduced to increase efficiency and reduce labour costs. Braverman identified automation as a tool for deskilling workers, thereby enhancing managerial control by making labour more replaceable and less autonomous.[8] In the digital era, algorithmic management represents a continuation of this trend, embedding control mechanisms within automated systems that mediate the labour process. Automation manifests through algorithms dictating workflows and performance standards in the platform economy. For example, food delivery platforms use automated systems to assign orders based on variables such as proximity, efficiency, and customer ratings. These systems optimise operational efficiency and degrade labour by intensifying work conditions and limiting worker agency.[9] By removing human oversight from the labour process, algorithmic management exacerbates the challenges of precarious work, including unpredictable schedules, low wages, and lack of job security.

The impact of algorithmic management on workers extends beyond its technical functions to shape their daily experiences and agency. Workers on food delivery platforms often face heightened pressure to meet algorithmically determined performance benchmarks. While ostensibly neutral, these benchmarks are imbued with managerial imperatives that prioritise productivity over worker well-being. Studies by Rosenblat and Stark highlight how such systems create an environment of constant surveillance, where workers must navigate opaque and often arbitrary decision-making processes.[10]

Braverman's analysis faced criticism for its insufficient emphasis on worker resistance and agency, a gap later addressed by scholars like Burawoy, who highlighted workers' active role in negotiating and resisting managerial control on the shopfloor.[11] Likewise, while algorithmic management imposes significant constraints, it also provides worker resistance and collective action opportunities. Scholars such as Wood et al.[12] have documented instances where platform workers leverage their collective power to challenge unfair practices and demand greater transparency. These acts of resistance underscore workers' agency within even the most controlled environments, aligning with Burawoy's[13] critique of Braverman's[14] deterministic view of labour control.

[8] Braverman H., *ibidem*.
[9] Griesbach K., *et al.*, *Algorithmic Control in Platform Food Delivery Work*, in *Socius: Sociological Research for a Dynamic World*, 5, 2019.
[10] Rosenblat A., Stark L., nt. (4).
[11] Burawoy M., *Manufacturing consent: changes in the labor process under monopoly capitalism*, University of Chicago Press, Chicago, 2010.
[12] Wood A.J., *et al.*, *Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy*, in *Work, Employment and Society*, 33, 1, 2019, 56–75.
[13] Burawoy M., nt. (11).
[14] Braverman H., nt. (5).

Labour Process Theory remains a vital framework for understanding the dynamics of control in modern workplaces. Its application to algorithmic management in the platform economy reveals how historical concepts of automation and managerial oversight continue to shape labour processes. By situating algorithmic management within the broader trajectory of labour control, this review highlights its role in perpetuating the degradation of labour while also acknowledging the resilience and agency of workers. As platform labour continues to expand, further research is needed to explore the intersections of technology, control, and resistance in shaping the future of work.

3. Delivery Worker's Dependency and Agency on the Platform Economy.

In recent years, literature on platform labour has examined the exploitative nature of app-based gig work and its precarious employment model. For example, Sun, Chen, and Rani[15] delineate precarious and de-flexible platform labour in the food delivery sector in China as "sticky labour". "Sticky labour" describes workers' increased dependency on platforms. The stickiness arises from decreased flexibility, intensified surveillance, and the need to work longer to earn a sustainable income. Workers are increasingly bound to the platform economy, with limited mobility and upward progression, reflecting the "sticky floor" phenomenon coined by Berheide,[16] seen in other low-skilled occupations. The lack of pathways for upward mobility within the platform's organisational structure further entrenches workers in their roles, creating a cycle of dependency and limited job mobility. The analysis of sticky labour resonates with the findings of Kang and Kim,[17] which attempt to explain why delivery app drivers continue to work in the precarious delivery sector in South Korea. Kang and Kim observed that app-based delivery workers, who initially lacked overall capital, tried to improve their economic, social, cultural, and symbolic capital through delivery platform labour, considering themselves independent contractors or entrepreneurs. However, over time, they could not accumulate capital; instead, they experienced a series of losses and recovered capital.[18] Therefore, they stagnate in the app-based gig work system throughout the repetitive process of acquiring, losing, and recovering capital, even though they keep attempting to escape "sticky" platform labour.

The conditions of "sticky" platform labour and their dependency on it restrict workers' flexibility and autonomy.[19] For example, Ivanova et al.[20] investigate the balance between

[15] Sun P., Yujie Chen J., Rani U., *From Flexible Labour to 'Sticky Labour': A Tracking Study of Workers in the Food-Delivery Platform Economy of China*, in *Work, Employment and Society*, 37, 2, 2023, 412–431.
[16] Berheide C.W., *Women still 'stuck' in low-level jobs. Women in Public Service*, in *A Bulletin of the Center for Women in Government*, 3, 1, 1992, 1–4.
[17] Kang M., Kim S., *Why do delivery app drivers continue to work on delivery? - Drawing on Bourdieu's forms of capital (배달앱 기사는 왜 배달 노동에 머무는가 - Bourdieu 의 자본이론을 중심으로)*, in *Korean Social Welfare Studies*, 73, 1, 2021, 65–94.
[18] *Ibidem*.
[19] Ivanova M., *et al.*, *Foodora and Deliveroo: The app as a boss? Control and autonomy in app-based management – the case of food delivery riders*, Working Paper Forschungsförderung no. 107, Hans-Böckler-Stiftung, Düsseldorf, 2018; Veen A., Barratt T., Goods C., *Platform-Capital's 'App-etite' for Control: A Labour Process Analysis of Food-Delivery Work in Australia*, in *Work, Employment and Society*, 34, 3, 2020, 388-406.
[20] Ivanova M., *et al.*, *ibidem*.

autonomy and control in managing food delivery workers on platforms like Foodora and Deliveroo. Their study reveals that platforms exert significant control through algorithmic techniques despite the purported autonomy granted to riders – such as flexible scheduling and route choices. These include internal competition for shifts, performance-based bonuses, and automated messaging systems that subtly influence food delivery riders' decisions and behaviours. This duality indicates that autonomy is contingent upon meeting the performance standards set by the platforms, thereby limiting true worker independence.

Similarly, Veen, Barratt, and Goods[21] argue that algorithmic management and surveillance through the new technology only allow limited agency of delivery workers. Veen, Barratt, and Goods[22] provide a detailed labour process analysis of food delivery work in Australia, highlighting the multifaceted control regimes employed by platforms like Deliveroo and Uber Eats. They identify three primary features of these regimes: the panoptic nature of the technological infrastructure, the use of information asymmetries to constrain worker choices, and the obfuscated performance management systems. These elements combine to limit workers' agency and reinforce the precarious nature of gig work.

While it is true that algorithmic management and surveillance make platform labour increasingly sticky, there is a growing body of literature on workers' agency, mobilisation, resistance, and solidarity. Bonini and Treré explore how algorithms shape our lives under a platform economy and how people resist this control.[23] They argue that platform operators' deterministic belief in algorithms' meritocratic nature contrasts with users' cooperative and resistant navigation of these systems. Bonini and Treré illustrate how users activate "algorithmic agency" and engage in "algorithmic resistance" – repurposing algorithms for their benefit in a continuous negotiation of power. Examples include food delivery couriers using bots for better assignments and working for multiple platforms despite bans. This resistance is likened to "everyday" resistance, focusing on pragmatic survival rather than revolutionary change. The authors highlight how platform users form informal solidarity groups and formal associations to improve conditions and challenge platform power. The case study of Cianferoni, Perrig, and Bonvin[24] illustrates how bike couriers successfully engaged in meaningful social dialogue – despite significant communication and organisational challenges – and improved their working conditions through collective action in Swiss food delivery platforms. The collective action of meal delivery riders, arising simultaneously around the globe, hints at the possibility of algorithmic solidarity. Yu, Treré, and Bonini explore the concept of algorithmic solidarity among Chinese meal delivery workers.[25] Their research shows how workers use social media platforms like WeChat to build solidarity networks, share information, and develop collective strategies to cope with

[21] Veen A., Barratt T., Goods C., nt. (19).
[22] *Ibidem*.
[23] Bonini T., Treré E., *Algorithms of Resistance: the Everyday Fight Against Platform Power*, The MIT Press, Cambridge, 2024.
[24] Cianferoni N., Perrig L., Bonvin J.-L., *When voices from below are heard: The case of a Swiss online food-delivery platform*, in Wilkinson A., Dundon T., Mowbray P.K., Brooks S. (eds), *Missing voices? Integrating worker voice and social dialogue in the platform economy*, Edward Elgar Publishing, Northampton, 2022.
[25] Yu Z., Treré E., Bonini T., *The emergence of algorithmic solidarity: unveiling mutual aid practices and resistance among Chinese delivery workers*, in *Media International Australia*, 183, 1, 2022, 107-123.

and resist the algorithmic management systems that govern their work. This study underscores the resilience and creativity of workers in developing tactics to counterbalance the power of algorithms, demonstrating that agency can manifest in various forms even within highly controlled environments. Therefore, it is important to understand how platform workers activate their resources and utilise tactics and strategies to exercise their agency within the platform economy.

4. Food Delivery and Platform Labour in The Netherlands and South Korea.

The food delivery industry is expanding rapidly, driven by increasing demand. In both the Netherlands and South Korea, the app-based food delivery industry, while having slightly slowed after COVID-19, holds a significant market share. Comparing the experiences of food delivery riders in The Netherlands and South Korea is potentially illuminating workers' experiences as employment models are structured differently in the two countries. This section will briefly address this and other aspects to provide some background on food delivery companies in the Netherlands and South Korea.

In the Netherlands, Thuisbezorgd, part of the Just Eat Takeaway group, commands around 70% of the market, while Uber Eats holds approximately 15% of the Dutch food delivery market.[26] Thuisbezorgd employs its riders through Randstad, a recruitment agency.[27] Riders receive temporary contracts with Randstad, and they can select from contract options that allow them to work 16, 24, 32, or 40 hours per week, with mandatory shifts – such as at least two evening shifts weekly and one weekend. Thuisbezorgd pays slightly above the statutory minimum wage in the Netherlands, supplemented with additional holiday bonuses and a kilometre allowance. The Dutch collective agreements provide some labour protections but are less comprehensive than standard employment contracts.[28] Uber Eats riders operate as self-employed contractors. Trade unions often criticise this type of employment model, calling it 'pseudo-self-employed'. Uber Eats riders have no fixed working schedules, and Uber Eats riders' earnings are based on a piece-rate pay system. Riders working for Thuisbezorgd and Uber Eats are represented by the Riders' Union Netherlands, which is supported by the Dutch Federation of Trade Unions, FNV.[29]

In South Korea, among food delivery platforms, Baemin – part of the German-based Delivery Hero group – holds a 62% market share, while Coupang Eats has 20%, and Yogiyo has 17%.[30] A very small number of these Korean food delivery jobs resemble the employment model of Thuisbezorgd; most are self-employed positions similar to Uber Eats,

[26] FNV, *Riders Deserve Better: The Meal-Delivery Sector in The Netherlands*, 2019, https://www.ridersunion.nl/getmedia/f825808f-2f88-4af6-a33e-8dcc1ddcfbc3/Riders-deserve-better.pdf.
[27] *See* Randstad, https://www.randstad.nl/ (last accessed on 27 November 2024).
[28] Scheele L., Im Z., Leschke J., *Unpredictable and non-transparent working conditions? Riders in the food-delivery sector in six EU countries*, EuSocialCit Working Paper, March 2023.
[29] FNV, nt. (26).
[30] Tae-Byeong C., *[The Chart] Coupang Eats rises to 2nd place, Baemin remains 1st…Ranking of popular delivery apps in Korea [더차트] 2 위 올라선 쿠팡이츠, 배민 1 위...국내 인기 배달 앱 순위는]*, in *Money Today*, 12 May 2024, https://news.mt.co.kr/mtview.php?no=2024051010584719564 (last accessed on 27 November 2024).

operating under a piece-rate pay system. The Korean government does not recognise the legal status of food delivery riders as employed workers. Despite this, the Rider Union Korea and the Delivery Platform Union – supported by the Korean Confederation of Trade Unions (KCTU) – represent food delivery riders. In South Korea, food delivery work has been an established form of labour since the 1960s and 1970s, long before the introduction of delivery apps and platforms.[31] Due to the simplicity of the job, it has primarily been seen as a part-time position for teenagers and young adults in their 20s to earn pocket money, and as a temporary job for older adults.[32]

In both countries, food delivery platforms use narratives to recruit new riders, reflecting contradictory images to attract a diverse range of potential employees. On one hand, for example, they depict the job as ideal for young individuals (primarily male) seeking part-time work for supplementary income. This narrative appeals to those who view the job as a temporary or flexible gig, with slogans like "Flexible hours to fit your schedule," highlighting the ability to balance work with personal commitments, such as studies, hobbies, or family. During my fieldwork, several interviewees and riders, including students, women with children, and job seekers transitioning their careers, expressed their preference for this flexibility. On the other hand, these platforms also present the job as a viable full-time occupation, mainly targeting middle-aged adults or immigrants with limited employment options. Narratives like "Be your own boss" used by Uber Eats, Bamin, and Coupang Eats emphasise flexibility and autonomy, contrasting these jobs with traditional employment where managers surveil and control workers. This second narrative stresses competitive income opportunities based on performance, suggesting that the job can provide a stable and rewarding livelihood for those who commit fully. Union organisers I have interviewed in both countries estimate that around 30% or more of delivery drivers are older adults in their 40s to 50s working full-time.

Despite variations in the interfaces of the apps and local labour practices tailored to regional environments and laws, the food delivery platform's fundamental structure and operational methods are strikingly similar worldwide. Just Eat Takeaway (Thuisbezorgd)[33] operates in 25 countries, Uber Eats[34] in 45 countries, and Delivery Hero (Bamin)[35] in 17 countries as of 2024. A significant commonality is the use of algorithmic management and AI-supported technical features. In a private conversation, the FNV union organiser point out; "For Uber Eats, most algorithms and programs are managed by the California headquarters, with local engineers focusing on interface and payment aspects in the local environment". Despite some regional differences, significant similarities exist in terms of algorithmic management and how food delivery apps assign delivery tasks by using incentives and penalties, as observed across Thuisbezorgd, Uber Eats, Bamin, and Coupang Eats.

[31] Kang M., Kim S., nt. (17).
[32] *Ibidem*.
[33] Just Eat Takeaway.com https://careers.justeattakeaway.com/global/en (last accessed on 27 November 2024).
[34] Uber Eats https://www.ubereats.com/nl-en (last accessed on 27 November 2024).
[35] Delivery Hero https://www.deliveryhero.com/ (last accessed on 27 November 2024).

5. Mixed Methods: Work as a Rider, Semi-structured Interviews, and Digital Observations.

Ethnography, especially digital ethnography, is inherently a mixed method, [36] encompassing various research strategies, including physical and digital observations, "deep hanging out",[37] participation in lived experience, archival research, interviews, and more. This paper employed mixed methods, including my own lived experience as a meal delivery rider, digital observations, and semi-structured interviews conducted on food delivery platforms in the Netherlands and South Korea between December 27, 2023, and July 15, 2024. This research includes several food delivery platforms: Thuisbezorgd (a local brand of Just Eat Takeaway), Uber Eats, and the online grocery service Flink in the Netherlands, as well as Baemin (a local brand of Delivery Hero), Coupang Eats, and Il-Dae (small-scale local delivery networks) in Korea. I found that food delivery riders often work for several different food apps simultaneously or have previously worked as other types of platform workers, such as car-sharing drivers or parcel couriers. Therefore, I included several different food delivery platforms because the boundaries of these platforms are often relatively obscure for the platform workers, even though the platforms do not like their workers being employed by other competing platforms.

My fieldwork began with applying for jobs as a food delivery rider for three different apps: Thuisbezorgd, Uber Eats, and Flink in the Netherlands. Becoming a delivery rider was comparatively easy through the apps without any human interactions. After completing a few hours of online courses, I could start on-site training shifts with Thuisbezorgd and Flink. Since Uber Eats requires a business registration number, completing the enrollment process as a meal delivery rider took three weeks. After completing on-site training, I worked as a rider with a 12-hour fixed contract for Thuisbezorgd for one month in January 2024. My experience as a food delivery rider helped me understand how meal delivery apps operate and the app-based algorithmic management involved in this type of gig work.

After gaining lived experience as a meal delivery rider, I started digital observations on two online communities of meal delivery riders from January to July 15, 2024. The digital observations include the Scoober community of Thuisbezorgd meal delivery riders and an open chat group of Korean meal delivery drivers on KakaoTalk, the largest messenger app in South Korea. Both online communities have around three hundred members. Digital observation[38] was employed to understand meal delivery riders' everyday experiences and issues, including funny jokes, information exchange, and work-related matters. It was especially useful for gaining information and insights into the problems faced by Korean meal delivery riders because I was geographically far from these workers. Every day, I spent

[36] Pink S., *et al.*, *Digital ethnography: principles and practice*, SAGE Publications, Thousand Oaks, 2016; Markham A., *Ethnography in the Digital Internet Era: From Fields to Flows, Descriptions to Interventions,* in Denzin N.K., Lincoln Y.S. (eds), *The SAGE handbook of qualitative research*, SAGE Publications, Thousand Oaks, 2018.
[37] Barenberegt B.A., *Audiovisual and digital ethnography: a practical and theoretical guide*, Routledge, London, 2022.
[38] Pink S., *et al.*, nt. (36); Markham A., nt. (36); Barenberegt B.A., nt. (37).

two to three hours checking new messages and taking screenshots to collect data, which became a powerful methodological practice in digital ethnography.[39]

While conducting digital observation, I also conducted semi-structured interviews with food delivery riders, business owners, and union organisers (see Table 1). The interviewees belonged to various food delivery platforms. Some also had other jobs working for one or more platforms or other types of part-time or full-time jobs. To recruit interviewees, I employed various strategies, including snowball sampling, one of the most popular methods in qualitative research.[40] In this research, multiple snowballs were developed from various starting points. I directly approached some drivers through the Scoober community of Thuisbezorgd. I also knew several people who were working as food delivery riders. I conducted several interviews with these riders, and one with a Dutch union organiser of the Federation of Dutch Trade Unions.[41] For Korean food delivery riders, I approached the Korea Institute of Labour Safety and Health.[42] With their help, two Korean food delivery riders voluntarily contacted me. After conducting interviews with these volunteer participants, I used snowball sampling to recruit new participants through their networks. I also interviewed a Korean union organiser of the Rider Union, which is a member union of the Korean Confederation of Trade Unions (KCTU). I also interviewed two small business owners who rely on food delivery companies to understand this topic more holistically.

The interviews lasted from thirty minutes to two hours. According to the interviewee's preference, interviews in the Netherlands were mostly conducted in person at a café, the library, or my office. The interviews with Korean delivery riders were conducted digitally via Google Meet, Zoom, and Microsoft Teams. The interview questions included how riders interact with food delivery apps, their work experiences, and their opinions on algorithmic assignments. Interviews were conducted in English or Korean, recorded with consent, and fully transcribed. The initial transcripts were generated using the AI transcribing app Cockatoo.com. I proofread all AI-generated transcripts to correct errors. Since not all interviewees were native English speakers and the accuracy of the Korean transcripts was relatively low, I manually edited the interview transcriptions. A pseudonym was assigned to each interviewee to protect their anonymity and privacy. After proofreading, the interview transcripts were manually coded to understand how the interviewees perceived algorithmic assignments. These interviews were combined with the findings from digital observation of the online communities discussed above.

[39] Bonini T., Treré E., nt. (23).
[40] Clark T., *et al.*, *Bryman's social research methods*, Oxford University Press, Oxford, 2021.
[41] FNV, nt. (26).
[42] Korea Institute of Labor Safety and Health, https://sites.google.com/view/kilsh/home (last accessed on 27 November 2024).

Table 1. The List of Interviewees.

		Name	Age	Gender	Country of Origin	Apps/Platforms	Employment
NL	1	Gina	27	female	Argentina	Flink	Employed with a fixed-hour contract
	2	Jin	43	female	South Korea	Uber Eats	Self-employed
	3	Hyun	36	female	South Korea	Uber Eats	Self-employed
	4	Kara	26	female	Ireland	Flink	Employed with a fixed-hour contract
	5	Chloe	23	female	The U. S	Thuisbezorgd	Employed with a fixed-hour contract
	6	A	42	male	Netherlands	Union organiser	-
S. Korea	7	Lee	56	male	South Korea	Bamin, Coupang Eats, Il-Dae	Self-employed
	8	Ji	Early 30s	female	South Korea	Bamin	Self-employed
	9	Shin	54	male	South Korea	Bamin, Coupang Eats, Il-Dae	Self-employed
	10	Doo	47	male	South Korea	Café Owner	-
	11	Joo	44	female	South Korea	Café Owner	-
	12	Kim	Early 30s	male	South Korea	Union organiser	-

In the following section, I will discuss how algorithmic delivery assignments control labour similarly across different platforms in the two countries. I will also explore food delivery riders' experiences to examine how they benefit from this system, the aspects they strongly resist, and the reasons behind them.

6. Delivery Riders' Reactions to Algorithmic Management: Three Responses to the AI Delivery Mode.

My preliminary observations reveal ongoing tensions between food delivery platforms and delivery workers, particularly regarding how these platforms market themselves as ideal workplaces offering flexible hours, minimal oversight, and the opportunity to work outdoors. While these promises may hold some truth, delivery workers often express frustration with algorithmic management systems, which directly impact their decision-making. Scholars[43] have noted that algorithmic management is designed to enhance efficiency, reduce costs, and improve service quality. However, it also raises significant concerns about fairness, transparency, and workers' autonomy.[44] These concerns are particularly evident in meal delivery platforms, which advertise flexibility and autonomy as key selling points for workers while simultaneously employing automated systems to oversee, assign, and evaluate tasks. This contradiction between marketing narratives and the lived experiences of meal delivery workers amplifies tensions surrounding a particular feature of algorithmic management, referred to as the "AI delivery mode" by meal delivery platforms in South Korea.

South Korean platforms have recently introduced the so-called AI delivery mode, which eliminates riders' ability to accept or decline tasks – a choice still available in the general mode. By contrast, Thuisbezorgd employs a feature similar to the AI delivery mode but without explicitly naming it. However, it generates less agitation due to its employment-based structure compared to the self-employed status of many Korean delivery workers. In the AI delivery mode, now the default state when the app is activated, task allocation is enforced automatically, effectively removing rider decision-making and creating a system of automated task assignment. This shift underscores the deeper tensions inherent in algorithmic management.

Through the digital observations and semi-structured interviews, I found three different responses by delivery workers to the AI delivery mode. These were responses to the flexibility of working hours and riders' autonomy, and could be categorised as: 1) curious, 2) neutral, and 3) agitated.

Firstly, some young delivery workers in South Korea approach the AI delivery mode with curiosity. Notably, some of these riders also work as YouTubers, where they broadcast their delivery experiences, share tips, and experiment with algorithms, offering insights and strategies for navigating the AI delivery mode. This interest in exploring how new technologies can be used to maximise earnings highlights their adaptability and openness to innovation. This enthusiasm reflects a broader trend in Asia, where digital advancements and emerging technologies are often embraced as opportunities for economic growth and societal progress. By contrast, in Europe and the United States, such technologies, including AI, are

[43] Jarrahi M.H., *Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making*, in *Business Horizons*, 61, 4, 2018, 577-586; Kellogg K.C., Valentine M.A., Christin A., *Algorithms at Work: The New Contested Terrain of Control*, in *Academy of Management Annals*, 14, 1, 2020, 366-410; Wirtz B.W., Weyerer J.C., Geyer C., *Artificial Intelligence and the Public Sector – Applications and Challenges*, in *International Journal of Public Administration*, 42, 7, 2019, 596-615.

[44] Wood A.J., *et al.*, nt. (12); Kellogg K.C., Valentine M.A., Christin A., nt. (43); Yu Z., Treré E., Bonini T., nt. (25); Bonini T., Treré E., nt. (23).

met with more scepticism and frequently viewed as potential threats to employment security and privacy.[45]

The second response of delivery workers can be categorised as one of neutrality towards the AI delivery mode. These delivery workers are neither against nor in favour of the AI delivery mode. While they recognise its drawbacks and privacy issues, they do not voice their frustrations, often due to various personal circumstances. This group typically consists of riders with fixed employment rather than self-employed, part-timers, and older riders who work for secondary income or take on temporary jobs while seeking more stable, 'real' career opportunities. For example, Chloe, an American international student taking a gap year before beginning her master's degree program in the Netherlands, works part-time at Thuisbezorgd through the staffing agency Randstad. Thuisbezorgd is more attractive for her because it guarantees an hourly wage: "even if it is not very busy. I will still get paid", said Cloe. Therefore, the option to accept or decline is irrelevant to her, unlike Uber drivers, who must decide if they "accept or decline" and even "cancel" the order. These decisions can significantly affect their income based on the delivery distance and the dispatch price. In contrast, Thuisbezorgd does not provide any decline or cancelling options comparable to the AI delivery mode of Bamin and Coupang Eats. Unlike Bamin and Coupang delivery riders, this does not create much dispute among Thuisbezorgd riders because they are employees who are paid by the hour.

The third response of delivery riders is one of frustration towards the AI delivery mode. This group primarily consists of full-time male freelance or self-employed riders who depend on delivery work as their primary source of income. They express concerns about frequent platform policy and operational changes – such as the options to "accept or decline" and "cancel" delivery tasks – algorithmic penalties, and incentives for extra earnings. These riders face significant stress and instability due to the unpredictable nature of algorithmic management and the financial penalties associated with declining or cancelling deliveries.[46] Platform companies commonly classify delivery riders as independent contractors rather than employees, limiting management's control since direct control under subcontracting arrangements is constrained.[47] As a result, these companies utilise algorithmic management to control labour and exercise a de facto employment relationship. These types of delivery riders, who consider themselves their own boss, are sensitive to the various techniques and frequently changing policies of algorithmic management because it directly affects their income and safety. They openly express their complaints in online communities about manipulative algorithmic management and the new introduction of the AI delivery mode.

As discussed above, not all delivery drivers oppose the AI delivery mode. However, I found that full-time delivery workers tend to be more critical of algorithmic management,

[45] Neudert L.M., Knuutila A., Howard, P.N., *Global attitudes towards AI, machine learning & automated decision making*, Oxford Commission on AI & Good Governance, Oxford, 2020; Eom J., Park S., Kim H., *Societal guardrails for AI: Regional differences in public opinion on artificial intelligence*, in *Social Policy & Planning*, 51, 5, 2024, 1004-1022.

[46] Rosenblat A., *Uberland: How Algorithms Are Rewriting the Rules of Work*, University of California Press, Berkeley, 2018; Veen A., Barratt T., Goods C., nt. (19).

[47] Stewart A., Stanford J., *Regulating work in the gig economy: What are the options?*, in *The Economic and Labour Relations Review*, 28, 3, 2017, 420-437.

including the AI delivery mode. In the following sections, I will examine which specific algorithmic management strategies delivery riders find problematic and why this group of delivery riders is particularly critical of algorithmic management. As will be demonstrated, algorithmic management systems significantly shape key aspects of delivery work, such as safety and working time, often leading to worker resistance.

7. Navigating Control: Incentives, Penalties, and Autonomy in the AI Delivery Mode.

In this section, I analyse the aspects of the platform that this group of riders finds particularly problematic. Specifically, I explore two key factors: the operational mechanisms of the AI delivery mode and its integration with incentives and penalties. Through these tools, algorithmic management on delivery platforms plays a critical role in shaping the work processes of self-employed and freelance riders, exerting control over their labour choices and often compromising their autonomy.

During my field research, I observed that frequent complaints from self-employed or freelance delivery riders about the AI delivery mode are often linked to how this feature integrates with other types of labour control techniques: penalties and incentives. Platforms employ these techniques to encourage participation from self-employed or freelance delivery riders, such as those working for Uber Eats, Baemin, and Coupang Eats. Maintaining a sufficient number of active riders and reducing turnover is crucial for delivery platforms. Platforms offer incentives as bonuses in addition to the basic delivery fee to motivate riders. These incentives are often provided for completing a specific number of deliveries within a set time frame or during challenging conditions, such as bad weather, special events like sports games or festivals, or when delivery wait times increase due to repeated order rejections. For example, Hyun, an Uber Eats rider in The Netherlands, shared her experience with incentives: "When I was working last October and November, I noticed that during the World Cup, they offered incentives when delivery orders suddenly surged." These policies are consistent across platforms like Uber Eats, Baemin, and Coupang Eats and are designed to minimise delivery rejections, especially for assignments involving bad weather, long distances, or less desirable locations.

In South Korea, platforms offer more frequent and higher incentives to encourage riders to use the AI delivery mode. Riders receive bonuses when they use the AI mode, whereas they rarely receive bonuses when using the general mode, which allows them to accept or decline delivery assignments. However, in the AI delivery mode, good delivery assignments are often bundled with so-called "shit calls"; the term Korean riders use for bad delivery assignments. Shit calls usually involve low delivery prices and long distances or being sent to undesirable neighbourhoods. Therefore, these riders constantly face the dilemma of whether to continue using the AI delivery mode to receive the bonus or to reject these "shit calls". Many fear that the algorithm may learn from their acceptance and lower their overall price rates eventually. For example, Shin was highly critical of AI and the platform's labour control but was also amazed by the technological advancement and efficiency of the AI delivery mode.

As he explained:

The AI delivery mode really evolved a lot. Why? Because the AI delivery mode can do things that regular delivery assignments can't. I noticed that a lot. It's convenient for pickups, deliveries, and handing things over to customers. But this AI delivery mode combines good calls with "shit" calls. Ideally, all drivers should stick together and reject these, but this kind of algorithm has developed because some people accept them. The problem is that we are getting used to the convenience of the AI delivery mode and the assistance of algorithms. That is quite scary. (Shin, male delivery rider, age 54, Korea).

This resonates with Wood's [48] argument about algorithmic management's ability to automate workforce direction, evaluation, and discipline. In addition, increasing standardisation and automation may also worsen working conditions.[49]

Secondly, platforms indirectly enforce algorithmic penalties when delivery riders choose not to use the AI delivery mode. Penalties are commonly applied on platforms like Uber Eats, Baemin, and Coupang Eats, mainly targeting self-employed or freelance riders who repeatedly refuse delivery assignments. For instance, riders who reject multiple dispatches may be temporarily banned from accessing the app for several hours, or even days. The issue lies in the one-sided nature and lack of transparency in platform information. Those outside the platform, including riders, have no clear understanding of how algorithmic management operates or the criteria it relies on. This opacity raises concerns about its potential use as a tool for imposing penalties and enforcing strong forms of control over workers.

Self-employed or freelance delivery riders prefer higher prices and short-distance assignments with steady orders. The ability to accept or decline delivery tasks allows them to maximise earnings while retaining control over their schedules. By exercising this choice, riders can avoid poorly paid or long-distance deliveries and assignments in less desirable areas. Shin, a Korean delivery rider, shared: "On days when I could choose and reject delivery assignments according to my preferences, I could meet my financial goals, making the work more enjoyable." However, delivery platforms aim to optimise profits by distributing riders evenly across locations to cover as much area as possible at minimal cost, often restricting riders' ability to exercise this option. In response to concerns about algorithmic management, FNV, a Dutch union, conducted a mini-experiment with Uber drivers to investigate how penalties are applied. Their findings revealed that drivers who refused rides three times experienced delays in receiving new assignments. The union organiser explained: "Riders feel it is a punishment. If drivers are truly self-employed, they should be free to refuse or accept jobs without consequences because Uber Eats claims so. But no one exactly knows how the algorithm works".

Similarly, South Korean riders frequently discuss penalties in online communities, asking how many times they can reject orders before being banned from the app. Without transparent information, riders are left to speculate based on their experiences, leading to

[48] Wood A.J., *Algorithmic management consequences for work organisation and working conditions*, in *JRC Working Papers Series on Labour, Education and Technology*, 7, 2021.
[49] *Ibidem*.

inconsistent and unclear conclusions. The opaque programming of these algorithms leaves riders uncertain about the rules governing their work, while platforms maintain full knowledge of how the system operates. This information asymmetry gives platforms significant control over the labour process while withholding critical details from workers. Algorithms remain a "black box" to riders, with decision-making criteria and processes hidden from view.[50] These systems rely on real-time data monitoring and performance evaluations to minimise human oversight and maximise efficiency for the platform.[51] However, this approach intensifies labour control and surveillance, reducing workers' ability to negotiate or resist unfavourable conditions. As one FNV organiser described: "Riders said to me they really feel like a rat or a mouse in a laboratory, […] a puppet, something that is manipulated by a higher force".

Platforms appear to indirectly push delivery riders toward using the AI mode by withholding incentives and imposing significant restrictions on available options. Additionally, penalties are applied when riders exercise their agency by accepting or declining deliveries rather than relying on the AI mode. As discussed, self-employed riders find their autonomy intricately compromised by the algorithm's penalties and incentives management strategies. Consequently, complaints about this are common in interviews and online communities. Despite being officially self-employed, riders face labour control through algorithmic management that borders on micromanagement. Therefore, algorithmic management intensifies work effort, creates new sources of algorithmic insecurity, and fuels workplace resistance.[52]

8. More Than a Job: How Delivery Riders Balance Dignity and Precarity in Platform Work.

This section explores delivery riders' criticisms of algorithmic management, focusing on two key questions: Why are certain groups of delivery riders so dissatisfied with the AI mode? And how do these riders interpret algorithmic management concerning their socioeconomic status? The main sources of frustration include decreased income, extended working hours, and increased safety risks caused by being directed to undesirable locations. These issues are exacerbated by the AI delivery mode, which restricts or removes their ability to "accept or decline" tasks. However, the impact of algorithmic management extends beyond these tangible challenges, shaping how riders view their work and their place in society.

During the interviews, riders in both countries mentioned the low public image of delivery riders. Platforms often portray food delivery riders as young, energetic individuals, typically students or part-timers seeking flexible work hours to complement their studies or other commitments. These riders are commonly perceived as transient workers, riding through cities on bicycles or scooters and embracing the gig economy for convenience and autonomy. However, the stigma surrounding food delivery work is a recurring theme in riders'

[50] Rosenblat A., Stark L., nt. (4).
[51] Wood A.J., nt. (48).
[52] *Ibidem*.

narratives. Jin, a delivery rider in the Netherlands, described delivery work as "low-skilled, dirty work," convenient as a part-time job for young people but not a profession to take pride in. In our interview, Jin elaborated:

Most of the people doing delivery work are young. Fundamentally, people see meal delivery as a bottom-tier job. It feels like something anyone can do if they want to. In Korea, this would likely be categorised as one of the so-called '3D jobs'—dirty, dangerous, and demeaning. Uber Eats and other delivery work aren't really socially recognised as respectable professions. (Jin, female delivery rider, Netherlands).

In South Korea, the stigma is harsher. Riders frequently encounter derogatory terms like "ttal-bae" (딸배), a slang term used to disparage food delivery workers. Ji, another rider, explained that the term's offensive connotations have even led online communities to ban its use. Riders also face subtle forms of exclusion. For example, in the Netherlands, delivery riders are often required to use back doors or alleys when picking up food, and they are denied access to restrooms in restaurants. These social perceptions contribute to the low public image of food delivery work, further marginalising those who rely on it for their livelihood.

While the narratives promoted by food delivery platforms often emphasise the flexibility and autonomy of the job, studies[53] reveal a stark contrast in the reality of "sticky platform labour," which requires delivery riders to work longer hours to earn a sustainable income. Lee, a male delivery rider actively involved in organising delivery riders in South Korea, shared his observations on individuals who were almost forced to participate in the delivery platform economy in his region:

Most people over 40 who work full-time in this delivery market have experienced failure in their previous jobs. Many of them are trying for a second chance, not because they want to do delivery work, but because they have no choice. They are forced into it to make a living. (Lee, male delivery rider and local activist, South Korea).

Therefore, for riders who have turned to full-time food delivery through platforms as a last resort after trying various other jobs, there is a keen awareness of the public images associated with delivery work. Amid these challenges, therefore, riders value aspects of platform labour that offer a semblance of autonomy and control. One such feature is the ability to "accept or decline" delivery assignments.

[53] Sun P., Yujie Chen J., Rani U., nt. (15).

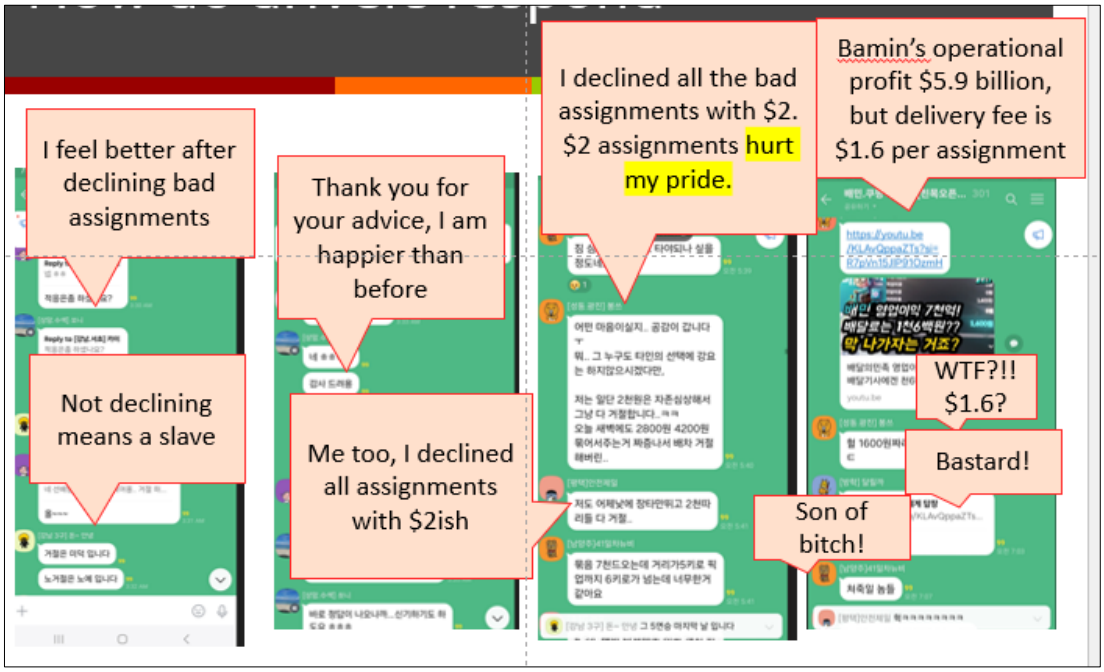

Figure 2. Kakao talk open chat community. Elaboration of the Author.

While riders understand that this autonomy is largely illusory, it allows them to reclaim a degree of agency within a system dominated by algorithmic control. This autonomy serves as a symbolic mechanism for resisting the stigma attached to their work, enabling riders to construct a narrative of self-reliance.[54] These riders need an aspect of the platform labour process that allows them to maintain a sense of respect. While they know they are not truly self-employed, they require a nominal sense of being their "own boss." This feeling is bolstered by having the ability to choose or decline delivery assignments and taking pride in the fact that, despite long hours, they can earn a relatively higher income than other low-wage, unskilled jobs involving managerial control. The need for respect and recognition is a recurring theme in online communities, where these riders seek validation through their work.

This aligns with Noronha et al.'s[55] concept of "dignity work," where workers in insecure roles find small opportunities for the agency to maintain self-respect in dehumanising environments. Similarly, Laaser and Bolton[56] emphasise that even limited autonomy, such as choosing tasks or schedules, can provide workers with a sense of purpose and acknowledgement. This search for dignity is also closely tied to entrepreneurial aspirations. Kang and Kim[57] found that app-based delivery workers, initially lacking in various forms of capital, sought to enhance their economic, social, cultural, and symbolic standing through

[54] Lamers L., *et al.*, *A Capability Approach to worker dignity under Algorithmic Management*, in *Ethics and Information Technology*, 24, 1, 2022, 10.
[55] Noronha E., Chakraborty S., D'Cruz P., *'Doing Dignity Work': Indian Security Guards' Interface with Precariousness*, in *Journal of Business Ethics*, 162, 3, 2020, 553-575.
[56] Laaser K., Bolton S., *Absolute autonomy, respectful recognition and derived dignity: Towards a typology of meaningful work*, in *International Journal of Management Reviews*, 24, 3, 2022, 373-393.
[57] Kang M., Kim S., nt. (17).

their work on delivery platforms, viewing themselves as independent contractors or entrepreneurs. Through the course of my field work I observed that fluctuating incomes and algorithmic demands seemed to erode initial aspirations by many riders to be seen as independent entrepreneurs.

The struggles of delivery riders under algorithmic management go beyond issues of income reduction, safety risks, and long working hours. Platforms often promise flexibility and autonomy, but the reality for many riders involves high levels of precarity and marginalisation. This is particularly significant for those who turn to delivery work as a last resort, seeking not only financial stability but also validation and dignity in their labour. Features like the "accept or decline" option become symbolic tools for asserting autonomy and navigating societal perceptions. Riders seek validation and respect in their work, striving to maintain a sense of dignity despite the challenging conditions imposed by algorithmic management.

9. Conclusion.

This study has examined the intricate relationship between algorithmic management and worker agency within the context of platform-based food delivery services, focusing on the relatively new AI assignment techniques employed in the Netherlands and South Korea. Through the lens of Labour Process Theory (LPT), it highlighted the role of algorithmic management as a contemporary framework for control, drawing parallels with historical mechanisms of automation and managerial oversight. The findings underscore the dual nature of platform labour: while algorithmic systems optimise efficiency and create opportunities for income generation, they also exacerbate worker precarity, intensify labour control, and undermine autonomy.

The research has shown that algorithmic management fundamentally reshapes the work experiences of delivery riders by embedding control mechanisms into automated workflows. Platforms market themselves as facilitators of flexibility and independence, yet the reality is often starkly different. Automated systems supervise and regulate various aspects of work, from task assignments to performance monitoring, using behavioural nudges, incentives, and penalties to exert influence. The study also revealed the significant role of societal perceptions in shaping delivery riders' experiences and responses to algorithmic management. In both the Netherlands and South Korea, food delivery is often viewed as low-skilled, transitory work, contributing to the marginalisation of riders and their profession. Delivery riders frequently face subtle forms of exclusion or being labelled with derogatory terms. These public perceptions deepen the challenges delivery riders face, making their quest for dignity and recognition a central aspect of their labour experience. The study highlights the symbolic importance of features such as the "accept or decline" option, which provides riders with a semblance of autonomy and control. While these features are often more symbolic than substantive, they allow riders to construct a narrative of self-reliance and dignity within a system characterised by pervasive control. This aligns

with the concept of "dignity work",[58] where workers in precarious roles find ways to maintain self-respect and validation.

This research contributes to the understanding of algorithmic management in the gig economy by examining workers' lived experiences and the broader social and symbolic dimensions of platform labour in two distinct locales: the Netherlands and South Korea. As platform labour continues to expand globally, addressing these challenges will require further research into the intersections of technology, control, and resistance and the development of policies that balance efficiency with fairness and dignity for workers.

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[58] Noronha E., Chakraborty S., D'Cruz P., nt. (55).

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