Regulating Algorithms: The Next Frontier in the Platform Economy Debate

JOANNA OCTAVIA

Introduction

The rise of the platform economy in recent years has offered employment prospects for Indonesia's large workforce. The number of platform workers has continued to grow as industries from transport to domestic and care work presented a wealth of business opportunities for technology entrepreneurs. This has become evident through the growth of both online web-based and location-based digital platforms, which rose from 142 in 2010 to more than 777 in 2020 worldwide.[1]

Digital platforms are intermediaries—often in the form of a website or mobile application—that connect workers to tasks or customers through the use of algorithms.[2] By collecting large amounts of workers' data, machine learning algorithms are deployed to automate a large proportion of managerial decision-making processes, which often include monitoring workers and assessing their performance.[3] Algorithmic management in the platform economy is an example of application of artificial intelligence and machine learning in the employment field. Proponents have praised the lower costs and greater efficiencies it brings to organizing, directing, and monitoring the labor process.[4&5] However, digital platforms are also facing mounting criticisms over their algorithmic management practices, which scholars argued have resulted in low pay, overwork, and exhaustion by workers.[6]

Joanna Octavia is a Doctoral Researcher at the Warwick Institute for Employment Research (IER).

Policymakers around the world are beginning to discuss how algorithms should be governed to ensure a human-centred approach in employment. But despite the longstanding interest in the platform economy, regulatory discussions in this sector in Indonesia have remained limited, fragmented, and specific to the ride-hailing industry, and rarely have included other services in the platform economy. While the issues of pay and social protection have always been a key area of focus in regulatory discussions on platform work, algorithmic management is visibly missing from the digital platform policy discourse in Indonesia.

The remainder of this paper is structured as follows. Section one will review literature on algorithmic management and control in the platform economy. Section two will discuss global policy developments and how policymakers around the world are approaching the issue of algorithmic management in digital platforms and its impact on workers. Section three will highlight the case study of Indonesia, by drawing on recent research on working conditions on digital platforms. Section four will discuss the policy implication, focusing especially on the lack of focus on algorithmic management in the Law on Manpower and platform economy regulations in Indonesia. Finally, section five will conclude with a reflection on the future research direction.

Algorithmic Management in Digital Platforms

Literature on algorithmic management mostly centres on the use of algorithms and other advanced technology as a means to control workers and align their behaviours with the objectives of the company.[7&8] Algorithmic management can be found in numerous Silicon Valley platforms, from Facebook deciding which posts will show up on users' newsfeeds, to Google producing search results relevant to the keywords, and Netflix suggesting which movies users should watch next. While algorithmic management is used across different industries, the use of these techniques is inherent in the design and operation of the digital labor platform business model.[9] For example, platform algorithms dispatch orders to workers based on a set of criteria—such as, geographical position—and assess their performance using metrics such as client reviews and customer feedbacks.[10&11] Such techniques allowed companies not only to assign tasks, but also to monitor, evaluate, and manage how workers behave.[12]

Literature categorizes work on digital platforms into two types. The first type is online web-based platform that outsources task through an open call to a geographically dispersed workforce. Some examples of these tasks include conducting translation or design work on a freelance basis or short-term tasks such as annotating images or transcribing video.[13] The second type of digital platforms are location-based platforms, often in the form of mobile applications, which allocate work to individuals in a specified geographical area. Examples of these may include transport services, food delivery, or domestic work.[14] Algorithmic management practices are present in both types of digital platforms, although their design may vary between platforms. As a core feature of platform work, algorithmic management keeps the costs of managing a dispersed and scalable workforce low by automating some managerial tasks that were traditionally carried out by human managers.[15&16]

Algorithms behind the platforms control how work is allocated through the system, which affects how workers can access work opportunities.[17] Studies on algorithmic management in location-based platform work have highlighted the frustration workers have over their lack of knowledge about the way orders are allocated through the app.[18,19,20] In *Riding for Deliveroo*, author Callum Cant analogized the order allocation system on Deliveroo – one of the world's most prominent food delivery platforms—to a 'black box', where the exact calculations and processes that determined instructions coming out of the app are virtually unknown.[21] While the explicit dispatching rule is that orders are allocated to the nearest drivers, in practice other factors—such as how well a worker has performed based on a set of criteria—may come into play.[22] Furthermore, the algorithms behind work allocation created time pressures on workers to work fast. For instance, some online web-based platforms organized work using algorithms that required workers to competitively bid for jobs on the platform, which meant that they needed to complete tasks quickly in order to maximize their earnings.[23]

Algorithms continuously monitors and oversees workers using a performance system that functions as a carrot-and-stick approach. The performance system of some platforms encouraged workers to achieve a target daily completion rate along with other metrics to obtain points and bonuses.[24] These mechanisms allowed platform companies to implement a reduction on salary or fares while awarding some workers for picking up extra shifts and completing more orders during busy times. For example, online food delivery platforms Foodora and Deliveroo

used monetary rewards to incentivise weekend attendance and speed.[25] Workers expressed that they felt anxious to take shifts so that their performance statistics are not affected.[26] By incentivizing workers to work at specific times and in a certain way, these behavioral prompts are a stark contrast to the flexibility and autonomy lauded by platform companies.

Algorithms also exert performance assessment using the rating system to ensure that workers conform to the system.[27&28] In digital platforms, workers were rated by their customers after they have completed their tasks. Platform workers place immense importance on their platform-based ratings and reputation as these determined how much work they might receive in the future.[29] For instance, online web-based platforms ranked highly rated workers more favorably in search results, which often led to more work.[30] In such a way, the rating system created a reputational insecurity among workers, whereby they felt pressed to take on "care work" and unpaid labor—for instance by making small talk with customers or providing some free services—to safeguard their ratings.[31&32] At the same time, the ratings are not free from bias. Consumer-sourced ratings are likely influenced by factors such as race, ethnicity, or gender, which can adversely impact some groups of workers more than others.[33]

Finally, algorithmic management controls who can work and can continue working for a given company and what terms they must fulfil in order for them to be able to stay. Opaque algorithmic management processes in both categories of platform work often did not give reason to workers why their work was rejected or why they were blocked from performing them.[34] The platform company Uber, for instance, is known to have dismissed workers with low ratings through a notification on their app without human intervention.[35] Studies have documented the constant fear workers have towards experiencing sudden suspension or termination from the platform.[36&37] Such ability by platforms to unilaterally withhold or cut workers' access to their source of livelihood illustrates the unequal power relations between workers and platforms that are present in algorithmic management practices.

The opacity of the process in which platforms gather and update data, and the secretive nature with which platforms handle disclosure of algorithms, offers little understanding of how algorithms influence or determine certain decisions.[38] The constant surveillance workers experienced from the moment they switched on the app made workers feel that they have little say over when and where they work. The little transparency produces information and power asymmetries between workers and the apps that

control their work. Moreover, algorithmic management contributes to a general feeling of dehumanization among workers, as the intense focus on the efficient deployment of labor effectively suppresses the human element of work.[39] Algorithmic management can be very frustrating for many platform workers who must confront their work situation in fear, passivity, and anxiety on a daily basis.[40] Alternatively, the frustration of platform workers can lead to their everyday acts of resistance—practices of manipulation, subversion, and disruption—which not only erode the trust between workers but also risk them being deactivated from the platforms.[41]

Global Development in Algorithmic Regulation

Under algorithmic management, platform companies have structured an unequal relationship between themselves and the workers who work on their platforms. While workers may not always understand what algorithmic management entails and how the system works, they know that their work performance is always monitored, supervised, and assessed by the platforms.[42] At the same time, the platformization of labor has been accompanied by the growth of self-employment of independent contractors, which many scholars have argued as a misclassification of their employment status due to the level of control that algorithms have over workers.[43] Such misclassification creates power asymmetries in which digital platforms hold greater control over how workers should behave and perform.

Recent policy debate on platform worker rights has expanded from employment status to touching on the issue of algorithmic labor control. In the United States, the AB5 presumption that came into force on 1 January 2020 in California presumes that platform workers are employees, unless if the platform can demonstrate that workers are free from control and direction by the hiring company, perform work outside of the usual course of business, and are independently established in that occupation.[44] In response, platform companies launched Proposition 22 (also known as Prop 22), a ballot initiative campaign that exempts platform companies from AB5. The success of Prop 22 in the November 2020 state election granted platform companies the ability to classify their drivers as independent contractors, rather than employees. As such, they were exempt from having to provide employee benefits, which include paid

sick time, overtime, health care, and bargaining rights.

On the other side of the globe, the European Commission has for several years stressed the need to address the ongoing misclassification of employment status.[45] The recently released draft Directive on working conditions in the platform economy aimed "to ensure fairness, transparency and accountability in algorithmic management in the platform economy context".[46] The Directive highlights the need to inform workers of automated monitoring and decision-making systems that significantly affect their work. More importantly, it includes the requirement to impose human monitoring on automated systems and significant decisions pertaining to platform access, such as suspensions or terminations.

Among other key points, the Directive further outlined the key risks facing workers, such as harms arising from employment status misclassification and algorithmic management. The Directive presumes that a contractual relationship between platforms and workers is an employment relationship if they fulfil at least two aspects of control of work: (1) determining upper limits for the level of renumeration; (2) requiring respect of specific rules on appearance, conduct toward customers or performance of work; (3) supervising performance of work or verifying quality of results; (4) restricting freedom, including by sanctions, to organize work; and (5) restricting the possibility to build a client base or perform work for any third party.[47] Deemed as a promising instrument by legal scholars specializing in the platform economy, the proposed Directive has the potential to bring more transparency around the use of computer algorithms and AI techniques in managing work delivered through digital platforms by specifically addressing the issue of control.[48]

Other multilateral forums and advocacy organizations have voiced similar calls to action. The G20 AI Principles urges companies to commit to transparency and responsible disclosure of AI system, while the recent Youth20 (Y20) Summit under the 2022 G20 Indonesian Presidency called for the mitigation of algorithmic bias by ensuring avenues that allow for human intervention in areas such as employment. Fairwork Foundation, a research project based out of the Oxford Internet Institute that works to set and measure decent work standards in the platform economy, maintained that the transparent use of algorithms and the existence of an identifiable and documented policy that ensures equity in the hiring, disciplining, and firing of workers are crucial to the principle of fair management.[49]

Recent global policy developments around digital platforms, particularly

in developed countries, are moving towards regulating algorithmic management to make it more transparent and humane. Working conditions on digital platforms are strongly affected by algorithms, especially for workers performing low-skilled, location-based tasks such as transport, delivery, and care work. To ensure that algorithmic management does not take away workers' agency, it is imperative for the design of algorithmic models to be accompanied by accountability, transparency, and participation by the people it directly affects.

Case Study: Indonesia

Indonesia presents a case of algorithmic management in the employment field that takes place within a regulatory vacuum. In recent years, thanks to widespread smartphone use, affordable internet packages and high demand for services, digital platforms have enjoyed substantial growth and popularity in Indonesia.[50] The emergence of car ride-hailing services by the global platform Uber in 2014, followed by motorcycle taxis by Gojek, Grab and later Uber in 2015, had opened employment opportunities for millions of people across the archipelago. Other location-based digital platforms offering services such as care and domestic work achieved similar commercial success.[51] Alongside location-based digital platforms, the introduction of international and local microwork and online freelancing platforms had also resulted in the growing popularity of online web-based platform work for short-term, on-demand and deadline-dependent projects.[52]

With a population of over 273 million, as many as 59 percent of Indonesia's workforce are working in the informal sector.[53] Even before the emergence of digital platforms, the high number of people working in the informal sector indicates that a majority of the Indonesian workforce is working without legal recognition and protection. Although not all informal workers are poor, the informal sector is often linked to vulnerable employment and unstable income.[54] Against this backdrop, digital platforms have been commended by several researchers and the Indonesian government for their transformative contribution to the economy.[55] Given the scarcity of formal sector jobs, digital platforms with their low barriers to entry have been heralded as a source of job opportunities for Indonesia's underemployed and unemployed population. In developing countries such as Indonesia, earnings in platform work

can be higher than in the traditional sectors, making it a lucrative choice of work.[56]

However, several research have highlighted the adverse impacts of algorithmic management in location-based platform work in Indonesia, in particular within the ride-hailing industry.[57&58] One example of this impact is the speed and efficiency pressures placed on workers in completing the tasks distributed by the platform. For instance, the assignment system set by the algorithms of one leading platform company in Indonesia forced drivers to stay mobile and proactively search for customers.[59] Research has also found that platform workers in Indonesia work long hours—which may include the time spent waiting or travelling between jobs—in order to maintain their earnings.[60&61] Moreover, to sustain their performance on a particular platform, location-based platform workers in Indonesia often opt to accept all tasks that come to them in order to be assigned for future orders. This led them to only use one platform to access work, which made them vulnerable to job insecurity.[62]

Furthermore, algorithmic management reduces accountability by distancing platform companies from the impacts of their business decisions on the workers' livelihoods. Not unlike their counterparts in other countries, one way that platform companies in Indonesia had done this was by passing on the role of managerial supervision to customers' judgment, for example by asking customers to rate workers after the task is completed. Low customer ratings can cause suspension either temporarily or permanently, which made workers feel compelled to maintain a high rating.[63] Evidence from the field indicates that workers are aware of their vulnerable position, leading them to ask their customers to rate them highly even before the task is marked as complete.[64] The automated nature of disciplinary actions reduces the need for platform companies to participate in the day-to-day managerial decisions, and gave little opportunity for platform workers to contest decisions made by platforms.[65]

In comparison to research on working conditions in location-based platform work in Indonesia, there are very few empirical studies that have looked at Indonesians workers working on online web-based digital platforms, as most have focused on analyzing workers in several developing countries at once.[66&67] Despite scant literature, some figures are available. To illustrate the size and scale of the online web-based digital platform business, there are more than 170,000 Indonesian platform workers registered on nine international and local online web-based platforms, most of whom specialized in creative and multimedia, followed by clerical

and data entry. Out of this figure, about 2000 were considered as active workers, as their latest project was no more than 28 days from the time of data collection.[68]

A number of studies on automation and its implication on the future of work have predicted that more jobs will be created than lost in Indonesia as a result of innovation and technological adoption.[69] However, evidence indicates there has been an excess supply of workers listed on the platforms, vis-à-vis the demand for their labor, since the COVID-19 outbreak.[70] The increased competition had led to reduced income for existing platform workers, especially when perpetuated by algorithmic features that triggered intense competition between workers. Since work is not regularly available, workers have to look for tasks on a continuous basis, leading to high intensity of work.[71]

Studies found that algorithmic management on some online web-based labor platforms has negative implications on workers' overall wellbeing and has exacerbated the precarity that informal workers in Indonesia already experienced in their working lives, such as unfavorable working hours, the absence of health benefits, and lack of access to social protection.[72] To accommodate the pressures arising from increased competition, workers in developing countries—who made up the majority of workers on online web-based platforms—tend to work unpredictable schedules and unsocial hours as clients are often based in other time zones in the developed countries.[73&74] These working conditions are a source of exhaustion for workers and illustrate remote workers' limited bargaining power over their working time. Another study on micro workers in developing countries, which included Indonesia, demonstrates that workers were concerned about opaque algorithmic management processes that did not give reason why their work was rejected or why they were blocked from performing them. Arbitrary rejections and blocks, and the subsequent lack of communication between platforms, clients and workers have been cited by workers as the biggest concerns they face when working on online web-based platforms. [75]

Ultimately, algorithmic management in platform work creates power imbalances that may be difficult to challenge by workers, as they do not have a say in how these systems work, nor have the resources and expertise to assess them. As evident in recent years, platform companies acting as the intermediary firm between workers and customers can unilaterally control how their platforms are to be used—especially since the terms and conditions that workers have to agree before starting work on

the platform—have not fairly shared the risks and liabilities between the two parties.[76]

Policy Implication

Although digital platforms are reshaping work and changing human resource management practices in the wider Indonesian labor market, policymaking in this space is still at a nascent stage. Mass mobilizations of platform workers, which often determined the direction of policy conversations pertaining to work on digital platforms, very rarely cite algorithmic management as a reason for protest, focusing instead on the issue of pay.[77] Regulations pertaining to platform work have only been issued by the Ministry of Transportation, covering only workers working in car-based and motorcycle-based ride-hailing services, while other services offered through digital platforms such as care, domestic work, and online freelancing are currently not regulated.

Two separate regulatory frameworks were designed for the two types of ride-hailing services. Car-based ride-hailing services are regulated under the Minister of Transportation Regulation No. 118 of 2018 on the Provision of Special For-Hire Transportation Services (PM 118), which was the revision of Minister of Transportation Regulations No. 108 of 2017 (PM 108) and No. 32 of 2016 (PM 32). Motorcycle-based ride-hailing services, on the other hand, are regulated by the Minister of Transportation Regulation No. 12 of 2019 (PM 12). However, neither of the two ride-hailing ministerial regulations have specified provisions for algorithmic management, which controls various aspects of the drivers' work and often decides whether they can keep working for a platform.

Algorithmic management by platform companies has worsened the unequal partnership between them and the workers working on digital platforms. The platformization of informal labor in recent years had given rise to the partnership work relationship, which is commonly referred to as *kemitraan* in the Indonesian language. Although PM 12 had specified the work relationship between platform-based motorcycle taxi drivers and platforms as a partnership, in practice this term is not recognized by the labor law, which only recognizes workers who possess formal working arrangements with, and receive income, from an employer.[78]

Similar to the independent contractor model in countries like the United States and the United Kingdom, the partnership model conceptualizes

the work relationship as to one that occurred between the service providers (workers) and service users (customers), while positioning the digital platform as merely an intermediary.[79] The partnership model has given platform companies the full power to unilaterally amend tariffs; change algorithms to increase the target number of trips drivers need to complete before bonuses can be paid out; suspend; or even terminate workers' access to the account, at any given time.[80&81] These evidences demonstrate how the algorithmic management practices of location-based platforms have further worsened the already unequal partnership between digital platforms and their workers. Without a regulatory framework or guideline for both (1) platform-worker partnership and (2) algorithmic management, platform companies will have no restrictions when building their algorithm model.[82]

Given scant efforts to regulate algorithms in the employment field, existing regulations are ill-prepared to mitigate the impacts of algorithmic management on the platform workforce. The government should consider updating the regulatory system to correspond to the new era of work, firstly by clarifying the partnership model widely applied by various digital platforms across the country and cementing it in the Law on Manpower. Currently, the partnership model draws on the terms and conditions that workers must agree to before starting work on the platform. By intervening in the issue of partnership in platform work, the government has the opportunity to reshape and redefine the bargaining positions that workers have in their relationship with digital platforms.

Second, regulatory updates on algorithmic management in digital labor platforms should ensure greater transparency and human right-based approach to employment.[83] As stakeholders in the business, platform workers have a right to be informed about the parameters and rules through which algorithms impact their working conditions or access to work.[84] Moreover, platform workers should be trained in algorithmic management practices, and be involved in the discussion of major changes to the design and function of the algorithms that govern their work.

Third, a regulation on algorithmic management should impose limits in its application in employment-related decision-making that could jeopardize their livelihoods, such as suspension or termination from platform. The urgency of this measure is underscored by the fact that most platform workers in Indonesia are dependent on one digital platform to earn a living.[85] Greater human oversight, interaction and intervention in decisions that could impact their livelihoods are necessary to ensure that

workers have a support system in place to contest automated decisions. In addition, the increasing complexity of algorithm design, as well as its vulnerability to biases and errors, signaled the need for preventive measures—such as risk evaluation—to be introduced in order to mitigate the impacts of decisions taken by automated systems.[86]

Conclusion

As a core feature of digital platforms, algorithmic management has significantly lowered labor costs and facilitated efficient decision-making for platform companies. At the same time, its practices have created detrimental effects on platform workers and exacerbated unequal power relations in the platform economy. Since the partnership model is not recognized by the current Law on Manpower, platform workers are operating in a regulatory vacuum, where the mechanisms of control enabled by algorithms are also not subject to any regulation. The current labor legislation and policies pertaining to platform work are outdated and do not capture the full complexities of algorithmic management in the employment field, and therefore needs to be carefully adapted to account for technological changes.

Future research in this field will benefit from evaluating the algorithmic management of work in wider Indonesian labor market contexts. These may include the algorithmic systems of control in other sectors such as logistics and retail, and the use of artificial intelligence in recruitment and its contribution to racial and gender bias in hiring. For the Indonesian government, being proactive in evaluating the challenges posed by algorithmic management will help to ensure that the deployment of technology in organizing human work can achieve its fullest potential and benefit all the stakeholders involved.

Endnotes

1   International Labor Organisation. *World Employment and Social Outlook 2021: The Role of Digital Labor Platforms in Transforming the World of Work.* (Geneva: International Labor Office, 2021), 19.
2   Algorithms are a list of instructions to be executed in order.
3   Katherine C. Kellogg, Melissa A. Valentine and Angele Christin. "Algorithms at Work: The New Contested Terrain of Control," *Academy of Management Annals* 14, no. 1 (2020).
4   Kellogg et al., "Algorithms at Work".
5   Hui Huang. "Algorithmic Management in Food-Delivery Platform Economy in China," *New Technology, Work and Employment.* https://doi.org/https://doi.org/10.1111/ntwe.12228.

6   Alex J. Wood, et al., "Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy," *Work, Employment and Society* 33, no. 1 (2018): 56-75. https://doi.org/https://doi.org/10.1177/0950017018785616.

7   Alex Rosenblat, *Uberland: How Algorithms Are Rewriting the Rules of Work* (Oakland, CA: University of California Press, 2018),

8   Wood et al., "Good Gig, Bad Gig,", 64.

9   International Labor Organization, *The role of digital labor platforms*, 21.

10 International Labor Organization, *The role of digital labor platforms*, 21.

11 Rosenblat, *Uberland*, 92.

12 Alex J. Wood. *Algorithmic Management: Consequences for Work organization and Working Conditions*. Seville: European Commission, 2021.

13 International labor organization, *The role of digital labour platforms*, 18.

14 International Labour organization, *The role of digital labor platforms*, 18.

15 M. K. Lee et al., "Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers," in CHI '15 Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (Seoul, Republic of Korea: Association for Computing Machinery, 2015).

16 Jamie Woodcock and Mark Graham, *The Gig Economy: A Critical Introduction* (Cambridge: Polity Press, 2020), 45.

17 International labor organization, *The role of digital labor platforms*, 93.

18 Alex Rosenblat and Luke Stark, "Algorithmic labor and Information Asymmetries: A Case Study of Uber's Drivers," *International Journal of Communication* 10, no. 27 (2016): 3766.

19 Aulia Nastiti. "Worker Unrest and Contentious labor Practice of Ride-Hailing Services in Indonesia" (paper presented at the Arryman Symposium at Buffett Institute, Northwestern University, 2017). https://www.edgs.northwestern.edu/documents/2017-nastiti---arryman-paper,-evanston-symposium,-may-13.pdf

20 Karen Gregory, "'My Life Is More Valuable Than This': Understanding Risk among On-Demand Food Couriers in Edinburgh," *Work, Employment and Society* 35, no. 2 (2020): 327.

21 Callum Cant, *Riding for Deliveroo* (Cambridge: Polity Press, 2020), 58.

22 Rosenblat*, Uberland*, 92.

23 Wood et al., "Good Gig, Bad Gig," 66.

24 Nastiti, "Worker Unrest and Contentious Labor," 11.

25 Ivanova et al., *Foodora and Deliveroo: The App as a Boss? Control and autonomy in app-based management - the case of food delivery riders*. Dusseldorf: Hans-Bockler-Stiftung, 2018.

26 Gregory, "'My Life Is More Valuable Than This'", 326.

27 David Stark and Ivana Pais, "Algorithmic Management in the Platform Economy," *Sociologica* 14, no. 3 (2021): 26, https://doi.org/https://doi.org/10.6092/issn.1971-8853/12221.

28 Rosenblat and Stark, "Algorithmic Labor and Information Asymmetries," 3771.

29 Alex J. Wood and Vili Lehdonvirta. "Platforms Disrupting Reputation: Precarity and Recognition Struggles in the Remote Gig Economy," *Sociology* (2022): 11.

30 Wood et al., "Good Gig, Bad Gig," 64.

31 Rosenblat, *Uberland*, 152.

32 Wood and Lehdonvirta, "Platforms Disrupting Reputation," 17.

33 Alex Rosenblat, Karen Levy, Solon Barocas, and Tim Hwang, "Discriminating Tastes: Uber's Customer Ratings as Vehicles for Workplace Discrimination: Customer Ratings and Workplace Discrimination," *Policy & Internet* 9 (06/28 2017): 8.

34 Rosenblat, *Uberland*, 150.

35 Rosenblat, *Uberland*, 150.

36 Wood et al., "Good Gig, Bad Gig, 68.

37 Ileen A. DeVault et al., *On-Demand Platform Workers in New York State: The Challenges for Public Policy*. (Ithaca: ILR Worker Institute, 2019), 4.

38 Stark and Pais, "Algorithmic Management in the Platform Economy," 15.

39 Eric M. Anicich. "Dehumanization Is a Feature of Gig Work, Not a Bug." (2022). https://hbr.org/2022/06/dehumanization-is-a-feature-of-gig-work-not-a-bug.

40 Sophia Galière. "When Food-Delivery Platform Workers Consent to Algorithmic Management: A Foucauldian Perspective." *New Technology, Work and Employment* 35, no. 3 (2020): 364.

41 Fabian Ferrari and Mark Graham, "Fissures in algorithmic power: platforms, code, and contestation," *Cultural Studies* 35, no. 4-5 (2021): 821

42 Fahmi Panimbang et al. *Resisting Exploitation by Algorithms: Drivers' Contestation of App-based Transport in Indonesia.* (Friedrich Ebert Stiftung, 2020), 11.

43 Nabiyla Risfa Izzati and Mas Muhammad Gibran Sesunan, "'Misclassified Partnership' and the Impact of Legal Loophole on Workers", *Bestuur* 10, no. 1 (2022): 60.

44 Miriam Kullmann, "'Platformisation' of Work: An EU Perspective on Introducing a Legal Presumption," *European Labour Law Journal* 13, no. 1 (2021): 69.

45 Kullman, "'Platformisation' of Work," 73-74.

46 European Commission, *Proposal for a Directive of the European Parliament and of the Council on Improving Working Conditions in Platform Work*, December 9, 2021, 3, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6605

47 Y20 Indonesia, *Y20 Indonesia 2022 Communique.* Y20 Indonesia. (Jakarta: Y20 Indonesia, 2022), 10.

48 Halefom Abraha, Jeremias Adams-Prassl, and Aislinn Kelly-Lyth, "Finetuning the Eu's Platform Work Directive," 17 May 2022, 2022, https://blogs.law.ox.ac.uk/business-law-blog/blog/2022/05/finetuning-eus-platform-work-directive.

49 Fairwork. *Fairwork Indonesia Ratings 2021: Labour Standards in the Gig Economy.* Fairwork (2021).

50 Panimbang et al., *Experiencing Exploitation by Algorithms*, 6.

51 Joanna Octavia, "Networks of Trust: Accessing Informal Work Online in Indonesia During Covid-19." *International labor Review* 161, no. 3 (2022): 499.

52 Uma Rani and Marianne Furrer, "Digital labor Platforms and New Forms of Flexible Work in Developing Countries: Algorithmic Management of Work and Workers," *Competition & Change* 25, no. 2 (2020): 216.

53 Badan Pusat Statistik. *Keadaan Ketenagakerjaan Indonesia Februari 2022.* Badan Pusat Statistik (Jakarta, Indonesia: 9 May 2022).

54 Joanna Octavia, "Building Back Better: Covid-19 and Informal Workers in Indonesia," *LSE Southeast Asia Blog. London School of Economics and Political Science*, 2020, https://blogs.lse.ac.uk/seac/2020/12/15/building-back-better-covid-19-and-informal-workers-in-indonesia/.

55 Tenggara Strategics, *Grab and the Gig Economy: Strengthening Economic Resilience.* Tenggara Strategics (Jakarta, Indonesia: 2019).

56 International labor Organization, *The role of digital labor platforms*, 23.

57 *Worker Unrest and Contentious labor Practice,* 19-35.

58 Panimbang et al., *Experiencing Exploitation by Algorithms*, 11-12.

59 Nastiti, *Worker Unrest and Contentious labor Practice*, 22.

60 Izzati and Sesunan, "Misclassified Partnership", 60.

61 Fairwork, *Labour Standards in the Platform Economy: Indonesia 2022 Ratings.* Fairwork (Oxford, 2022), 44.

62 International Labour Organisation, *The role of digital labour platforms*, 152.

63 Nastiti, *Worker Unrest and Contentious Labour Practice*, 26.

64 Panimbang et al., *Experiencing Exploitation by Algorithms*, 11.

65 Nastiti, *Worker Unrest and Contentious Labour Practice*, 26

66 Wood et al., "Good Gig, Bad Gig," 62-63.

67 Mark Graham, Isis Hjorth and Vili Lehdonvirta, "Digital Labour and Development: Impacts of Global Digital Labour Platforms and the Gig Economy on Worker Livelihoods," *Transfer: European Review of Labour and Research* 23, no. 2 (2017): 139.

68 A. L. Fardany Faisal et al., "Discovering Indonesian Digital Workers in Online Gig Economy Platforms," in *2019 International Conference on Information and Communications Technology (ICOIACT)*, 2019, pp. 554-559, doi: 10.1109/ICOIACT46704.2019.8938543.

69 McKinsey & Company, *Automation and the future of work in Indonesia: Jobs lost, jobs gained, jobs changed.* (Jakarta: McKinsey & Company, 2019), 5.

70 International Labour Organisation, *The role of digital labour platforms*, 51.

71 Rani and Furrer, "Digital Labour Platforms and New Forms of Flexible Work," 217.

72 Fathimah Fildzah Izzati, "Informalisasi Kerja Dan Kerentanan Para Pekerja Industri Kreatif Indonesia Dalam Flexploitation Dan Gig Economy," in *Ekonomi Informal Di Indonesia: Tinjauan Kritis Kebijakan Ketenagakerjaan*, ed. Andi Misbahul Pratiwi. (Jakarta, Indonesia: Trade Union Rights Centre, 2020), 71.

73 International Labour Organisation, *The role of digital labour platforms*, 23.

74 Wood et al., "Good Gig, Bad Gig," 67.

75 Rani and Furrer, "Digital Labour Platforms and New Forms of Flexible Work," 227.

76 Fairwork, *Indonesia 2022 Ratings*, 22.

77 Ioulia Bessa et al. *A Global Analysis of Worker Protest in Digital Labour Platforms*. (Geneva: International Labour Organisation, 2022), 6.

78 Izzati and Sesunan, "Misclassified Partnership", 61.

79 Robert Sprague, "Worker (Mis)Classification in the Sharing Economy: Trying to Fit Square Pegs in Round Holes," *ABA Journal of Labour & Employment Law* 31, no. 1 (2015): 1.

80 Panimbang et al., *Resisting Exploitation by Algorithms*, 11.

81 Michele Ford and Vivian Honan, "The Go-Jek Effect," in *Digital Indonesia: Connectivity and Divergence*, eds. Edwin Jurriëns and Ross Tapsell (Singapore: ISEAS-Yusof Ishak Institute, 2017).

82 Jessica Basukie, Yichuan Wang and Shuyang Li, "Big data governance and algorithmic management in sharing economy platform: A case of ridesharing in emerging markets," *Technological Forecasting & Social Change* 161 (2020), 8.

83 Valerio de Stefano, "'Negotiating the Algorithm': Automation, Artificial Intelligence and Labour Protection," *Comparative Labor Law & Policy Journal* 41, no. 1 (2018): 31.

84 Villaroel Luque, Carmen, "Workers Vs Algorithms: What Can the New Spanish Provision on Artificial Intelligence and Employment Achieve?" *VerfBlog*, 2022, https://verfassungsblog.de/workers-vs-ai/.

85 International Labour Organisation, *The role of digital labour platforms*, 152.

86 Dilip Krishna, Nancy Albinson and Yang Chu, *Managing Algorithmic Risks: Safeguarding the Use of Complex Algorithms and Machine Learning*, Deloitte.