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Algorithmic Management and Societal Relations: The Plight of Platform Workers in Southeast Asia

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Khazanah Research Institute

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Summary

- Algorithmic management is the use of computer programmes for the coordination of labour input in an organisation, such as planning, staffing, commanding, coordinating and controlling. Using AI, these management functions can be fully or partially taken over by automated decision making.

- Using a case study of app-based drivers in Southeast Asia, this article explains the impact of algorithmic management on societal relations. First, algorithmic management causes disintermediation and the individualisation of work, isolating drivers from managers, coworkers and clients. Second, it disrupts formal labour relations and creates a vacuum in place of established duties and obligations between buyers and suppliers of labour. Third, it facilitates the consolidation of platform power through information asymmetry and the reduction of human intervention and agency.

- Policies that focus more on governing technologies and platforms instead of workers may play an important role in tackling these issues. AI governance mechanisms should also go beyond the current emphasis on individual harms and redress; more attention should be given to addressing how technologies disrupt societal relationships.

1. Introduction

After Uber arrived on the scene and disrupted existing taxi companies, its successful model was quickly replicated in other sectors. A proliferation of new platforms emerged, offering to match demand and supply in all manner of task-based work. As more workers look to online platforms to earn income, the technology powering these platforms is having far-reaching effects beyond simply optimised task matching.

In this paper, we argue that algorithmic management by large online platforms disrupts existing societal relations in three ways. First, it makes work an individualised endeavour, as platform workers find it difficult to form sustainable connections with their managers, co-workers, and clients. Second, it creates a vacuum in place of established duties and obligations between buyers and suppliers of labour. Established labour relations are disrupted when workers are treated as independent contractors yet are dependent on platforms for job access and lack decision-making power on pricing and working conditions. Third, algorithmic management intensifies platforms' ability to concentrate power, as information asymmetry and unilateral business decisions create an opaque, extractive and unaccountable environment.

These relational effects in turn have tangible impacts on workers' ability to pursue collective action in hopes of establishing clear employment status, improving their labour conditions, and gaining clarity on the parameters of automated decision-making that shape their access to work.

Policy changes are needed to mitigate relational shifts and adjust to new forms of technology in work. This requires careful consideration of how societal relations and their attending power structures are impacted by increasing dependence on technology for labour management. To do that, we need to go beyond the current emphasis of AI governance on harms and redress at an individual level towards looking at connections between individuals and how technology changes how we relate to each other. In this article, we consider these issues as experienced by app-based drivers in Southeast Asia.

2. Algorithmic Management of Platform Workers

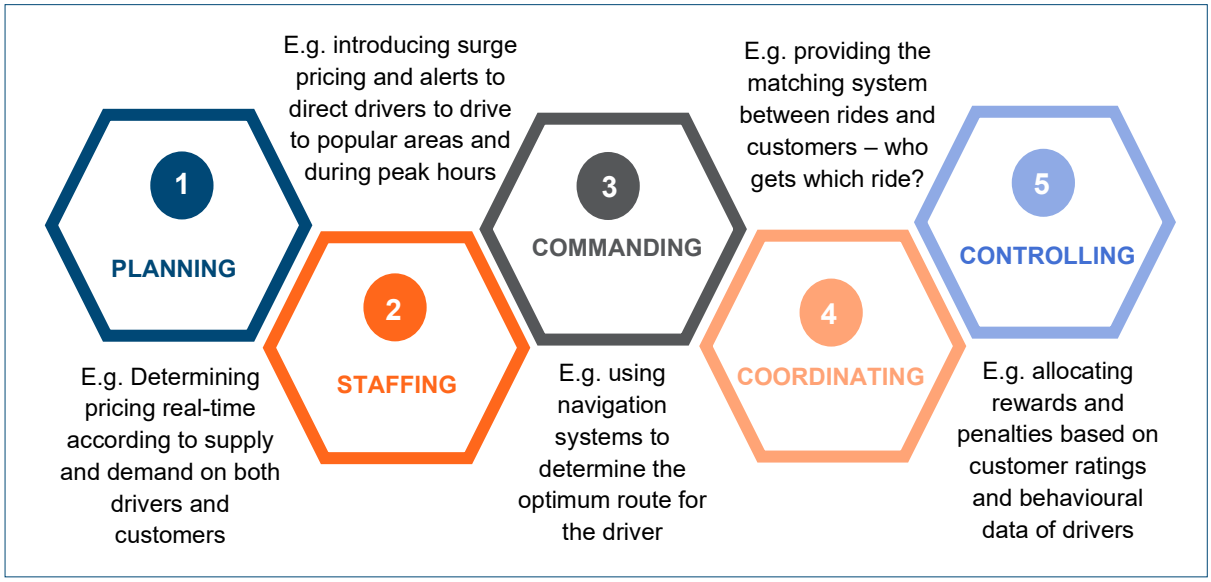
2.1. What is Algorithmic Management?

Algorithmic management has emerged as an area of interest for regulators, civil society watchdogs and academic researchers[1]. Sara Baiocco and her colleagues define algorithmic management as "the use of computer-programmed procedures for the coordination of labour input in an organisation," covering functions of planning, staffing, commanding, coordinating and controlling[2]. Using AI, these management functions can be fully or partially taken over by automated decision-making, as algorithms learn from large swaths of data collected from within and outside the organisation using them[3].

With the rise of digital labour platforms mediating the supply and demand of services, algorithmic management eases the logistical difficulties of coordinating labour transactions between millions of users in a timely manner. Tasks that can be largely automated include job matching between the supply and demand sides, dynamic price setting and incentive or penalty structures for both, and monitoring and quality control of service provision.

For instance, in the context of app-based driving (such as Grab or Foodpanda, more details in Section 3), the app matches drivers and passengers looking for rides, determines an appropriate fare, and monitors the duration of each journey. Figure 1 shows concrete examples of what algorithmic management looks like in the environment of app-based driving.

Figure 1. Examples of algorithmic management functions in the context of app-based driving



[1] AI Now Institute (2023)
[2] Baiocco et al. (2022)
[3] This can include behavioural data from users such as workers or clients, as well as data obtained from data brokers.

Algorithmic management allows platforms to operate at scale and create a virtuous cycle of more users (either clients or workers) and more user-generated data that can lead to more precise predictions and decision-making. The resulting efficiency generally results in higher customer satisfaction and lowered barriers of access to new earning opportunities for workers[4]. Platforms, being the intermediaries between the supply and demand sides of labour, are also able to extract economic value from both ends.

2.2. Platform Responsibility in Algorithmic Design

It is difficult to separate the impacts of platforms' business decisions and the consequences of algorithmic management. A business decision to corner the market by forgoing profit in the short term can lead to a pricing strategy that prioritises user supply over maximising profit. This can then get translated into algorithms that calculate a lower price range for users. When automated decision-making is opaque—a common complaint concerning algorithmic management—it can be difficult to understand whether the algorithms at work align with business decisions or simply reflect temporary or arbitrarily set conditions. This situation can be somewhat rectified if businesses choose to explain their systems to their stakeholders[5].

The impacts of business decisions and algorithmic management are intertwined. Business decisions underlie algorithmic rules, and successful platforms also hold disproportionate amounts of power when they achieve the status of a monopoly or monopsony[6]. The largest platforms with the biggest networks of workers and consumers become the preferred option for both, minimising the degree of accountability that users can demand of them and making it difficult for smaller platforms and other players to be competitive.

[4] Tech for Good Institute (2021)

[5] An example of such an effort is Meta's release of system cards to explain how AI systems within their products work. See Meta Transparency Center, "Our Approach to Explaining Ranking," Meta Transparency Center, December 31, 2023, https://transparency.fb.com/features/explaining-ranking.

[6] A monopsony is a market with only one buyer, as opposed to a monopoly, which is a market with only one seller. See William M. Boal and Michael R Ransom, "Monopsony in the Labor Market," Journal of Economic Literature 35, no. 1 (1997): 86–112.

3. The Case of App-based Drivers in Southeast Asia

In Southeast Asia, drivers for ride-hailing apps and delivery workers that rely on platforms for work are the ones bearing the brunt of algorithmic management.

In the early 2010s, Grab (originating as MyTeksi, a taxi-hailing app in Malaysia) began to gain traction, and Uber entered the Southeast Asian market. Since then, the region's app-based transportation sector has experienced intense growth[7]. As of 2023, a decade of jostling for market dominance has left the sector with only a few players: the most powerful ones for ride hailing are Grab (which subsumed Uber's regional business) and the Indonesian firm GoTo (after Gojek and Tokopedia merged), both of which also dominate the food delivery market along with Delivery Hero (which runs Foodpanda)[8].

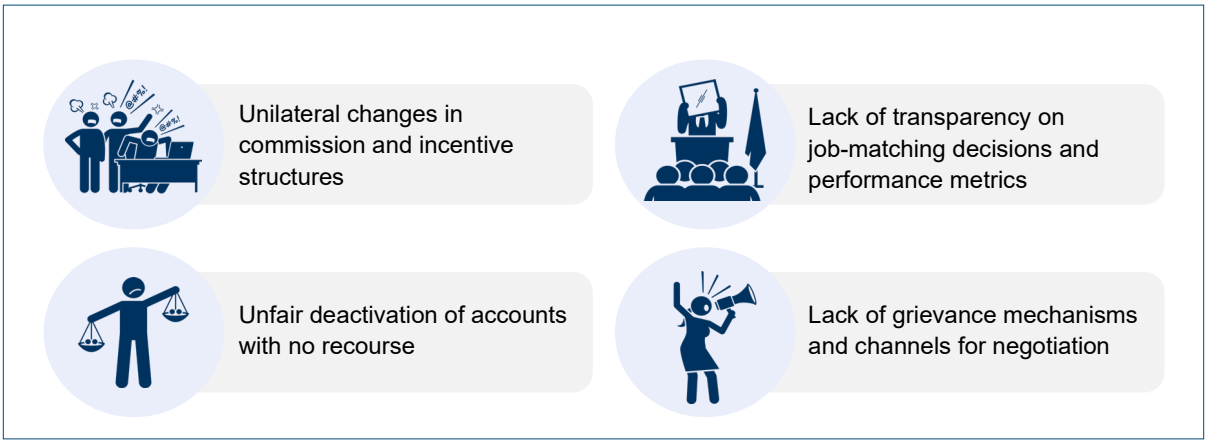
When platforms were growing and needed to recruit drivers, drivers benefited from being in short supply, so they received higher pay and better incentives than in traditional taxi companies and elsewhere in the transport sector. These benefits were not necessarily due to higher fares per ride, but could have been linked to the higher number of tasks available and reduced waiting time between tasks that increased overall pay[9].

When platforms were competing for market share in terms of users then, they were also having aggressive price wars that subsidised customer fees and driver pay, attracting users from both the demand and supply sides. Many of those working in the traditional transport sector transitioned to app-based driving, and app-based driving also became an attractive job opportunity for those who were not originally working within the transport sector[10].

However, as platforms gained popularity and attracted an excess supply of drivers, the drivers no longer had the upper hand. As platforms came under pressure to gain profits, drivers found themselves facing multiple rounds of rising commissions and reduced incentives[11]. As with platforms, drivers face the effects of capitalist forces intertwined with technological impacts. Unlike platforms, they have much less control over their own outcomes.

[7] Icasiano and Taeihagh (2021)
[8] Statista (2023)
[9] Panimbang (2021)
[10] Tech for Good Institute (2021)
[11] Panimbang (2021)

Figure 2. Platform workers under algorithmic management



The opaque and impersonal nature of algorithmic management worsens the circumstances that drivers face (summarised in Figure 2). Through the interface of their device screens, drivers across the region have experienced unilateral changes in incentive structures with no consultation[12,13]. Those who have had their accounts deactivated unfairly have struggled to find recourse, with one reported case in Malaysia of a driver who had to go through more than two and a half years of litigation to reinstate her account[14]. Drivers lack access to relationships with decisionmakers, as might be the case for a taxi driver whose license has been revoked. They also lack familiarity with the bureaucracy and grievance-filing process that a human resources department might have been able to provide in a less algorithmically driven workplace.

App-based driving is precarious work, due to inadequate social protections and occupational health and safety risks. Workers rush in traffic to obtain high customer ratings, which is often the only performance metric available to them. Drivers also feel pressured to accept unsuitable jobs against their judgment, hoping that the algorithms will in turn rank them higher and provide more access to jobs and better job matching, or that the algorithm-based apps will offer bonuses when the drivers meet targets by completing a high number of jobs[15].

Algorithmic control with little transparency leads to self-disciplining on the part of the workers who work long hours with little rest in between. Since they don't know exactly how or when they are being assigned tasks, they stay on call for long stretches hoping for work. The information asymmetry on how decisions are made also rouses the distrust of drivers against the job-matching algorithms. For example, drivers complain that the system slows down the assignment of jobs when they are about to achieve their targets, affecting their chances to obtain rewards[16].

[12] Teerakowitkajorn and Just Economy Labor Institute (2022)
[13] Irfani (2021)
[14] Cheong (2023)
[15] Baiocco et al. (2022)
[16] Baiocco et al. (2022)

Faced with asymmetries in both information and decision-making power, algorithmically managed workers have limited options for addressing their grievances. App-based drivers across Southeast Asia have therefore organised demonstrations and strikes (for example by turning off their apps en masse to refuse to work) to protest their low pay and poor working conditions[17].

However, the decentralised nature of the movement, workers' ambivalence for strikes, and the lack of public support for such actions have made it very difficult for workers to make substantive progress. For instance, in Thailand, a survey of 550 platform workers[18] showed that about half of the respondents did not favour protests and strikes[19]. In general, movements across the region have faced divisions on issues and priorities, as well as political differences, making large-scale organisation of collective bargaining very challenging.

[17] Bessa et al. (2022)

[18] Survey respondents represented four sectors: couriers (including food delivery, transport, and logistics); domestic work; massage therapy; and sex work. While the survey goes beyond app-based drivers, it indicates a general aversion to demonstrations and strikes within Thai culture. As mentioned in the article, striking workers (including app-based drivers) in Thailand do not generally receive a lot of public sympathy.

[19] Teerakowitkajorn and Just Economy Labor Institute (2022)

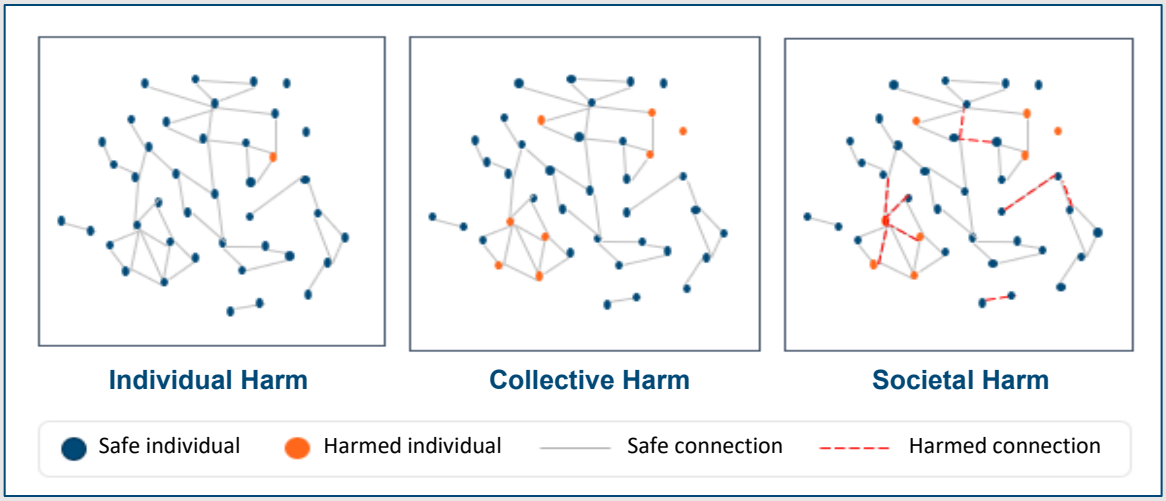
4. The Relational Impacts of Algorithmic Management

Elsewhere, one of us has argued the importance of considering the negative impacts of AI beyond *individual harm*, and of shifting some of our attention toward *societal harm*, or how certain AI-powered applications change the nature and quality of human relationships[20]. Box 1 summarises the notions of individual, collective and societal harms with some visualisations.

Box 1. Difference between individual, collective and societal harms

We can consider negative impacts of AI as harm (defined as "wrongful setback to or thwarting of an interest") happening to individuals, collectives and societies[21]. Figure 3 offers visualisations of different types of AI harms to aid in unpacking the theoretical framework.

Figure 3. Visualisation of different types of AI harms[22]



In the first box depicting individual harm, the orange dot represents an identifiable individual whose interests have been affected, while the blue dots are unharmed. In our case, an example of individual harm is when a single app-based driver's account is unfairly deactivated.

In the second box on collective harm, the orange dots represent a group of individuals who have experienced negative consequences of algorithmic discrimination by shared characteristics. Real life examples include complaints that Uber's automated termination affected drivers with darker skin colour disproportionately, and that its facial recognition system used to verify driver identity was less able to recognise drivers of colour, blocking them from accessing their own accounts.[23]

[20] Tan (2023)
[21] Smuha (2021)
[22] See Tan (2023) for a full discussion
[23] Barry (2021)

In the third box on societal harm, we shift our focus from the dots to the lines. The red dashed lines represent relationships that have been harmed, and even connections between persons who have not sustained direct harms from AI can be affected. The relational impacts discussed in this paper in the following subsections fall under this category of harm.

App-based drivers' deteriorated working conditions under algorithmic management are an instance of individual harm that has been documented extensively[24]. Much less covered, however, are the effects of algorithmic management on societal relations in terms of how algorithms have reshuffled and redefined the ways in which members of society relate to each other.

There are at least three examples of relational impacts resulting from algorithmic management by large online platforms that help illustrate the structural causes of app-based drivers' plight.

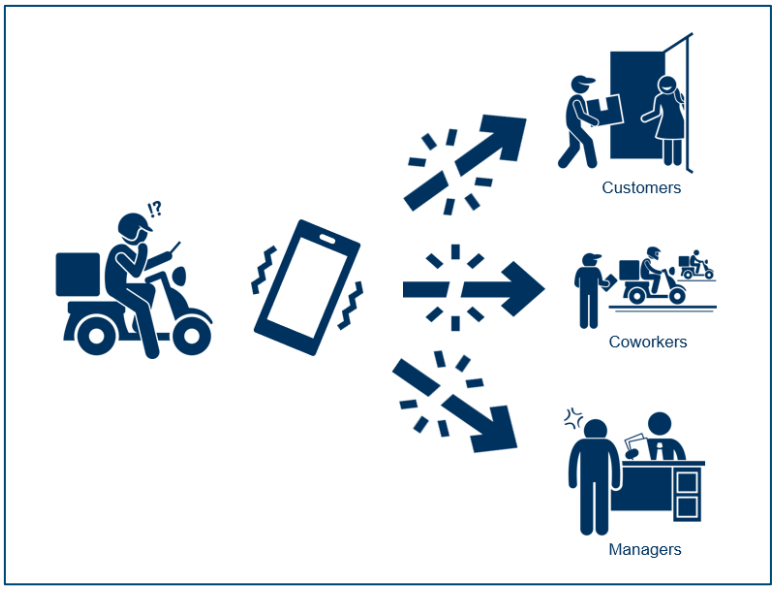
4.1. Disintermediation and the Individualisation of Work

The first disruption to societal relations is brought about by efforts to commodify labour suppliers—in this case, app-based drivers—as platforms depict drivers as largely faceless and nameless one-off service providers to a big pool of customers. While customers of ride-hailing apps receive driver identification and license plate numbers for their drivers, interactions mostly occur through the app, and encounters are fleeting. Drivers being a labour commodity benefits platforms in that customers return to the app to request further rides, whereas drivers find it difficult to establish a consistent client base outside of the platform and therefore must depend on the platforms for job access[25].

The disintermediation of relationships between customers and drivers is not the only form of isolation for app-based drivers. They also find themselves disconnected from human managers and their coworkers—namely, other drivers who are subjected to the same algorithmic control. Figure 4 illustrates these disrupted relationships.

[24] See, for example, stories about Grab published by Rest of World at https://restofworld.org/search/grab/.
[25] Li, Kominers, and Shroff (2021)

Figure 4. Disruptions of societal relationships surrounding individual app-based drivers



Besides strikes, app-based drivers in Southeast Asia use other forms of grassroots organisation to fulfil the need to connect to their peers. Associations and informal communities of drivers have built networks around a "mutual aid logic" with strong social commitment to support and help each other in times of need[26].

For example, in Indonesia, driver communities form organically when drivers meet physically and congregate at base camps where they rest or wait for orders, and they are digitally connected via WhatsApp groups. In early 2020, Fahmi Panimbang estimated that greater Jakarta had more than 5,000 driver communities, with each group comprising 10 to 100 members[27]. These groups serve various functions such as emergency and rapid response (in the case of accidents, conflicts, or other crises); welfare and mobilisation of funding; and information or knowledge sharing. Crucially, for the drivers, a sense of community and solidarity is also fostered through collective action, regular meetings, and leisure activities like weekend trips.

[26] Ford and Honan (2019)
[27] Panimbang (2021)

These worker initiatives are a means of compensating for the isolating and disempowering effects of algorithmic management. Similar forms of mobilisation have been observed in other countries such as Thailand[28], Malaysia[29], and Vietnam[30]. Driver communities have also found it important to organise beyond their localities, consolidating or collaborating across groups so as to span wider geographical areas. Some of these groups have become more formalised organisations with stronger institutional capacities such as associations and unions to tackle industry-wide structural issues beyond mutual aid[31].

4.2. The Reconfiguration of Roles and Obligations

A key problem that surfaces often concerning working conditions of app-based drivers globally is their unclear employment status as "partners." Platforms claim that they are merely intermediaries connecting independent workers with jobs, taking a small cut from their earnings. However, this argument starts to fray considering that many workers depend on platforms as their sole source of income. Furthermore, opaque algorithmic management controls their access to clients and limits their autonomy—deciding, for example, when and where they will work and how much to charge for their services.

By not defining drivers as employees, platforms skirt standard labour regulations such as having to provide a minimum wage, paid leave and overtime, and a notice period for dismissal. For some Southeast Asian countries, such as Malaysia[32], drivers are unable to form unions if they are not employees, hampering their ability to go through a formal collective bargaining process. In such an arrangement, tripartite labour relations established between the state, employers, and worker unions are rendered obsolete, as are the negotiated standards for decent work underlying sustainable development.

Viewed relationally, this can be seen as a way of clearing the slate of the established duties and obligations of each party within an employer/employee relationship as enshrined in employment law. In the place of these obligations and duties is a vacuum without institutional frameworks or support for drivers, whose lack of an employment identity cuts them off from access to labour rights and protections. This does not boil down to a simple solution of defining app-based drivers as employees of platforms, since some drivers prefer the flexibility of nonfixed employment and since not all drivers work fulltime[33]. Clearly, a nuanced way forward must be found to address the needs of different types of workers interacting with these algorithmic management systems.

[28] Teerakowitkajorn (2023)
[29] Cheong (2023)
[30] Buckley (2023)
[31] Ford and Honan (2019)
[32] Cheong (2023)
[33] Goh (2022)

It is not a clear-cut case that the disruptions caused by platforms are necessarily worse than the status quo. It is important to acknowledge that much of the work available in Southeast Asia is informal to begin with. In the case of Indonesia, for instance, researchers have argued that the existence of Gojek provided the unintended consequence of more opportunities for collective action, enabling motorcycle taxi drivers to organise against a "pseudo-employer" for wage bargaining[34].

However, over the long term, it would be better to establish formal channels and institutionalised processes to clarify the responsibilities of platforms, starting from employment classifications that include app-based workers. The purpose would be to ensure that the gains from workers organising are enshrined in law and policy processes, so that past efforts at defining roles can be built upon, without workers having to renegotiate terms repeatedly.

4.3. The Concentration of Power

By definition, power is relational, and its distribution is very rarely symmetrical or in equilibrium. It is unsurprising to see the use of technology tilt the balance of power in favour of the powerful, especially through the withholding of information and a lack of accountability.

The logic of the first mover advantage and network effects, propelled further by the capitalist business decisions alluded to earlier, also impact the market. A narrowing of market players has disproportionately benefited platforms with the largest number of workers. This reduces worker options in terms of who to work with and how to improve their working conditions and outcomes, thus disenfranchising an already vulnerable group.

In 2021, the leading ride-hailing app in Southeast Asia, Grab, showed remarkable market consolidation. In a consumer survey, 94 percent of respondents in Malaysia named Grab as their preferred ride-hailing app. The firm was also mentioned by 91 percent of respondents in the Philippines, 80 percent in Thailand, 74 percent in Singapore, 73 percent in Vietnam, and 52 percent in Indonesia. Gojek, trailing as a distant second, has become particularly popular in Indonesia[35].

The on-demand food delivery sector also appears to be highly concentrated: GrabFood (Grab), Foodpanda (Delivery Hero), and GoFood (Gojek) had cornered 84.8 percent of the market in 2021, according to one industry report[36].

[34] Ford and Honan (2017)

[35] According to statistics by Statista reflected in a survey of 7,200 respondents in Southeast Asia. See Statista, "Southeast Asia: Most Used Ride-Hailing Apps by Country." https://www.statista.com/statistics/1294871/sea-most-used-ride-hailing-apps-by-country.

[36] Frost & Sullivan (2022).

Algorithmic management also facilitates the consolidation of platform power in two ways. The first is information asymmetry. Platforms justify themselves in collecting tremendous amounts of behavioural and personal data in the name of optimising algorithms, giving them much more knowledge of the market ecosystem than what individual workers possess. Platforms are thus able to optimise decision-making for their own benefit, while workers are left without similar information.

Second, algorithmic management reduces human intervention and agency. The logic of algorithms is supposedly neutral and effective, with decisions made and acted upon swiftly with minimal need for human input or intervention. Thus, workers have little recourse to challenge decisions or file grievances. It is possible that even if drivers are able to report issues or grievances in-app, a slow platform response will increase the likelihood that they accept the decisions of algorithms in the interest of generating income. If this is widely the case, it may reduce workers' sense of agency and self-determination, which can affect their well-being and could stifle professional development.

5. Related Policy Developments

Initial policymaking concerns regarding the platform economy were rooted in concerns over customer safety and worker rights to social protections. Southeast Asian governments have made efforts to regulate the ride-hailing sector to address these concerns[37]. For example, countries in the region require that drivers be registered and that vehicles used for ride-sharing jobs meet certain minimum requirements. Also, countries like Malaysia have made it mandatory for ride-hailing drivers to contribute to the country's national social security plan for self-employed workers[38].

However, these regulations, while important and necessary, do not address the relational impacts of algorithmic management on worker welfare and well-being. Policies that focus more on governing technologies and platforms instead of workers may play a bigger role in tackling these issues.

For example, regulations that specifically address algorithmic management can provide checks and balances in the platform economy. China's Internet Information Service Algorithmic Recommendation Management Provisions, in force since 2022, deal predominantly with online content but also include regulations for labour management recommendation algorithms, such as those used by food delivery platforms. As a result, in accordance with the law's requirements, platforms registered their algorithms in China's algorithm registry and reported taking measures to use algorithms that give drivers more time to deliver orders and allow them to ask for more time if they need to[39]. This example shows that it is possible to nudge platforms to alter the priorities of their algorithms and take responsibility for the decisions made by their technologies, reestablishing their role in labour relations.

Southeast Asian governments could also learn from the two-tiered approach taken by the European Union (EU). Large platforms can be held in check by antitrust regulations or gatekeeper regulations such as the Digital Markets Act, which the EU adopted in 2022. The act requires large online platforms providing core services (known as gatekeepers) to comply with rules aimed at ensuring a fair market. What is important is that not all platforms are held to the same rules. Large platforms with disproportionate influence in the market face stricter rules than smaller platforms. In this way, platforms whose algorithms are likely to affect a large proportion of workers can be regulated more closely. A two-tiered regulatory model could hold larger platforms accountable and allow smaller platforms to innovate and grow.

[37] Icasiano and Taeihagh (2021)
[38] PERKESO (2017)
[39] Sheehan and Du (2022)

6. Conclusion

Presently, platform workers bear the brunt of algorithmic management's effects, but such management practices are expected to spread into traditional workplaces as big data and automation become more prevalent[40]. The world is just beginning to see how algorithmic management, along with other forms of recommender algorithms, can have harmful impacts on societal relations.

The isolation of workers makes it hard for them to make connections and find solidarity, which can hinder their ability to improve their collective working conditions. The distortion of roles and responsibilities in labour relations undoes years of efforts to codify expectations and develop workers' rights and social protections. Concentration of power in the hands of corporations deepens social inequalities.

Fortunately, human resilience is already at work in the ways workers are organising and demanding better working conditions. After all, workers directly experience the relational impacts of the technologies managing their work. As they respond to the effects of these technologies in real time, they should be consulted on policy matters because they are best placed to underline challenges and propose solutions. Measures that support worker organising and community building may result in creative community-driven solutions and more impactful policies.

Labour and technology policies can help regulate platforms and corporations seeking to maximise profit at the expense of people. Key policy developments in China and the EU directly address algorithmic management and the concentration of power by large online platforms. Southeast Asian governments can draw inspiration from efforts to nudge platforms to revise their algorithms to manage workers in a more humane way. They can also consider a two-tiered approach of regulating large online platforms differently from smaller platforms to provide a check on monopolistic and exploitative behaviour.

By directing policy interventions at platforms instead of individual users, structural and relational impacts as well as individual impacts of technologies can be addressed more effectively.

[40] Baiocco et al. (2022)

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