Original Article
ISSN (Online): 2582-7472

ShodhKosh: Journal of Visual and Performing Arts
January -June 2024 5(1), 2719–2725

ALGORITHMIC MANAGEMENT IN THE FOOD DELIVERY GIG ECONOMY: MECHANISMS OF CONTROL AND WORKER AUTONOMY

Anju Sigroha[1], Priya Kapoor[2]

[1] Professor, Department of Management Studies, Deenbandhu Chhotu Ram University of Science & Technology, Murthal
[2] Research Scholar, Department of Management Studies, Deenbandhu Chhotu Ram University of Science & Technology, Murthal

DOI
10.29121/shodhkosh.v5.i1.2024.2878

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The gig economy is a rapidly evolving segment of the global economy, attracting a major segment of the working population towards a new arrangement of work, including the food-delivery sector. When gig work is executed through a digitalized platform and work is controlled through app-based algorithms, it forms the basis of the platform economy. Automation and changing workforce demographics have paved way for workers to fulfil their desire for autonomy and flexibility. Such autonomy is however strictly monitored by algorithms which control workers activity through a rigorous mechanism of instructions, ratings and reviews that impacts the workers' autonomy, job satisfaction, and labour rights. This paper delves into the intricate relationship between algorithmic management and the illusion of independent work in the context of food delivery services. It explores the mechanisms through which algorithmic systems influence worker behaviour, impact worker autonomy, and give rise to the perceived illusion of independent work. The study highlights how these workers often perceive their roles as being autonomous and independent due to the flexibility and freedom associated with platform work and how this perception is shaped and manipulated by the algorithms that govern their work activities.

Keywords: Algorithmic Management, Gig Economy, Food Delivery, Independent Work, Autonomy, Control, Illusion, Worker Behaviour, Platform Economy.

1. INTRODUCTION

The gig economy, characterised by short-term, flexible work arrangements, has experienced significant growth in recent years. According to the US Bureau of Labor Statistics (2018), "gig work" is the term used to describe "task-based" and "electronically mediated jobs" in a sector or a connection between people delivering their services via a smartphone app and those making the service requests. Such a service is delivered via a platform, thus giving rise to the platform economy. App based work involves more of real than virtual tasks such as food-delivery, ride-sharing, personal care etc. (Stewart and Stanford. 2017). The 2008 financial crisis left people with loss of permanent jobs and a reliable source of income, which made them transition to a new flexible on-demand model of work (Mehta, 2020). This has led to the rise of “just-in-time” workforce which can be hired and fired according to the wishes and whims of the employer (Stefano, 2016). Most of these workers are migrant labourers who prefer such low-paid yet flexible jobs because they are easily available with no prior qualification required. Therefore, this type of migrant labour plays an infrastructure function for these platforms, one that is just as crucial to the survival of their business (Doorn, 2022). Both businesses and gig

workers expect to gain from this contractual arrangement in a way that the former can cut costs and get high-quality work from a worker with experience doing the particular tasks at hand, whereas the latter benefits from exceptional flexibility in terms of choosing their assignments and freedom to move on after completion (Mehta, 2020). Traditional HRM practises such as recruitment, selection, orientation and training become redundant in the gig economy due to the automation and absence of a human manager (Malik et al., 2021).

The food delivery industry stands out as a prominent contributor among the numerous gig economy industries, offering a variety of on-demand services to customers all over the world. Such services act as an intermediary between the restaurants and customers where workers deliver food ordered via an app regardless of the hour or weather (Popan, 2021). The proliferation of "platform capitalism" which has led to the shift from traditional standard employment to flexible work arrangements, has liberated the workers from the confinement of a fixed profession and given them a chance to offer their services as and how they like (Srnicek 2016). Platform workers in the food-delivery sector are frequently drawn to the apparent independence and flexibility of their working conditions. They have the freedom to choose the time, place and the duration of their work and can even choose to work for multiple platforms at a time to reduce dependence on one (Sundararajan, 2016). However, the use of algorithmic management by platform businesses raises concerns about how much freedom and control food delivery gig workers actually have over their jobs. Important parts of the workers' everyday operations, including order allocation, route optimization, and pricing, are governed by algorithms. Platform firms exploit this new and advanced technology to increase productivity, improve customer experience, and increase their revenue.

In the context of food delivery gig workers, this paper examines how the ideas of algorithmic management and workers' independence are intertwined in the modern digital economy. The platforms tempt the workers with the promise of autonomy, yet behind the scenes, algorithmic management systems have enormous influence over their actions. The paper seeks to explore the complex interactions between algorithmic management, worker autonomy, and the paradoxical perception of independence within the setting of food delivery services. The study proceeds by first providing a brief context on independent work and the food delivery platform economy. Further the role of algorithmic management and the forms of control used by platform firms over workers activity is highlighted. It also examines how such control creates an illusion of independence and freedom for the food-delivery workers to trap them in a vicious cycle of exploitation and denies them their labour rights.

2. OBJECTIVES OF THE STUDY

The objective of the paper is to explore the various as aspects of algorithms control over the activities of food-delivery platform workers and how the illusion of independence and worker autonomy differs from reality.

3. THEORETICAL BACKGROUND

Algorithmic Management: A New Paradigm

An emerging body of literature has identified that platform workers are regulated and controlled through an intricate mechanism of algorithms. Algorithmic management refers to the use of algorithms and data-driven technology by platform businesses to control and monitor the duties and activities of gig workers. Under such an arrangement, managerial functions are delegated to an automated system (Jarrahi et al. 2021). It is basically a mechanism involving six key processes "6 Rs" used by employers i.e., restricting and recommending to lead workers, recording and rating to evaluate them, and rewarding and replacing to discipline them (Kellogg et al., 2020). Such rigorous control is exerted through customer evaluations and performance metrics, and even employing behavioural nudges like surge pricing (Griesbach et al.,2019).

Nowadays, most of the businesses in the sharing (gig) economy have evolved to work performed by automated machines which were earlier performed by human managers (Lin et al. 2020). These machines allow the collection of large-scale data in real -time through recent advances in technology that enables automation to carry out control functions which were earlier performed by managers (Möhlmann et al., 2021). With the use of advanced algorithms and artificial intelligence, platform firms, monitor, assess, and regulate many elements of gig workers' activity on digital platforms. Some of such activities are specify order distribution, choose the best delivery routes, establish prices, and even rate worker performance. They even track couriers in real-time and estimate delivery times while also giving customers

numerical estimates and infographics (Orr et al, 2023). The main purpose of utilizing such a control is due to their commitment to enhance process efficiency, accuracy, and objectivity (Muldoon & Raekstad, 2022). While this approach offers effectiveness and customer pleasure, it also introduces a platform-driven management component that can undermine the impression of freedom among gig workers who deliver meal.

Algorithmic Control in Food-delivery

App-based food-delivery is a quadrangular relationship between the restaurants, consumers, workers and platforms (Barratt et al., 2020). Food delivery individuals who work as independent contractors for food delivery platforms and apps are referred to as gig workers or gig economy. These individuals pick up orders from restaurants and bring them to clients' homes or workplaces using their own vehicles (bicycles, motorbikes, or automobiles). They are a subset of the wider gig economy, which includes on-demand services such as ride-sharing, freelancing jobs, and others. Such workers use company-created smartphone applications to signal that they are available for work and interested in making deliveries (Barratt et al., 2020). These workers identify themselves as independent contractors or freelancers, accepting temporary projects or assignments that are given through digital platforms, as opposed to traditional employment arrangements. However, they face the dual pressure of delivering the food on time to customers waiting for their arrival and the way to earn their livelihood (Goods et al., 2019). Every delivery task introduces a new set of "masters" for everyone involved in a servitude relationship (Orr et. al, 2023). The deal is assigned by the algorithm to online food delivery services, whose apps show the location and contact details of the customers and merchants (Chen et, al. 2022). But given presence of low entry barriers, little skill and asset requirements, it opens up new job options for a variety of people (Goods et al., 2019).

Studies show that although there is no personalisation in app-work, platforms have a never-ending watch on these workers. Algorithmic technologies limit the level of interactions with co-workers, thereby restricting their freedom and autonomy (Kaine & Josserand 2019). Some workers might feel that it would be better not to have a human manager but apps are even more controlling and restrict any activity outside the purview of one's schedule. Many workers also feel that they do not get proper guidance regarding execution of tasks and only receive instructions from a bot, which leads to a feeling of impersonalization and isolation among them (Panteli et al., 2020). Moreover, there are no opportunities of career advancement or personal growth in such app-based work (Duggan et al., 2021). Algorithmic control can lead to a paradox where the appearance of worker independence masks the platform's significant influence. Gig workers' decisions are influenced by algorithms that optimize platform profits, potentially limiting their ability to negotiate terms, collectively bargain, or challenge unfair practices. However, survival in long run is possible only when such worker work under the specific control of the platforms. Platforms require workers to maintain a certain rating and execute tasks on a regular basis to remain in the field. Food-delivery might seem like a simple job of just executing a straightforward process, but in fact is a complex network of actions that regulate how work is done. Following are the aspects of control exerted by algorithms on food-delivery workers.

4. ASPECTS OF CONTROL

RATIONAL ASPECTS OF CONTROL

1. ALGORITHMIC DISPATCH AND CONTROL

- **TASK ALLOCATION**

  At the heart of food delivery platforms lies the dispatch algorithm, a sophisticated piece of software that determines which delivery driver is assigned to each order. This algorithm thinks about many things, for example how close a driver is to the restaurant, how long the food will take to get ready, when the order should reach the customer, and sometimes, how well the driver did in the past. Algorithms assign tasks based on proximity, historical data, and current demand. Workers have limited influence over the selection of orders, leading to a lack of control over their workload. Food delivery systems frequently conceal critical information by displaying specific orders that workers must accept or reject, tracking workers' acceptance rates, and explicitly and implicitly penalizing them for multiple refusals (Griesbach et al, 2019).

- **ROUTE OPTIMIZATION**

  Algorithms play a pivotal role in optimizing delivery routes, considering factors such as distance, traffic, and order priority. Once an order is accepted, the platform's algorithm calculates the most efficient route from the restaurant

to the customer's location. While this can save time and fuel, it can also be restrictive. Drivers are often expected to follow the algorithm's directions faithfully, leaving little room for deviations or shortcuts. This level of control can be disempowering for drivers who may have better local knowledge or alternate routes.

2. DYNAMIC PRICING AND EARNINGS

- **SURGE PRICING**

  Another algorithm-driven method employed by food delivery systems is dynamic pricing, sometimes known as surge pricing or peak pricing. Such pricing algorithms adjust delivery fees based on demand and supply, aligning prices with market conditions. Price increases for orders might be large when there is a great demand for delivery. Drivers may make more money during peak hours as a result of this, but it also breeds uncertainty. The pressure to work during these hours may affect drivers' ability to manage their job and personal lives.

- **DYNAMIC WAGES**

  Algorithmic systems determine wages based on variables like distance, time, and demand. There is no transparency in wage calculation which reduces workers' ability to negotiate or predict earnings. Drivers often rely on the platform to calculate their earnings for each completed order. While this may provide real-time income tracking, it also introduces an element of opacity. Drivers may not fully understand how earnings are calculated, leading to a perceived lack of control over their income.

3. PERFORMANCE METRICS AND FEEDBACK

- **PERFORMANCE METRICS**

  Algorithms assess worker performance using metrics such as delivery time and customer ratings. Workers strive to optimize these metrics to maintain access to higher-paying orders. Customer ratings indicate the likelihood of a worker being matched with the customer in the future (Griesbach et al, 2019). Performance Metrics Food delivery platforms employ algorithms to evaluate worker performance through metrics like delivery time, completion rate, and customer ratings. Rational control over performance ensures consistency and quality of service.

- **RATINGS AND REVIEWS**

  Most food delivery services use a rating system that allows both customers and drivers to assess one another. Their employment prospects may be severely impacted by their driver ratings. Low ratings may result in less opportunities and lower pay, while high ratings may result in more and better order assignments. This fosters a competitive environment where drivers are encouraged to put the needs of the client ahead of other factors, potentially harming their independence.

5. NORMATIVE ASPECTS OF CONTROL

Algorithmic management has normative influence over platform employees in such a way that they willingly submit to control. (Galière, 2020).

1. Diffused Surveillance

   Diffused surveillance refers to a situation where individuals are under constant observation, but they are not always aware of who is watching or what is being observed. This can have significant implications for the behaviour and actions of those being surveilled. In the case of food delivery workers, it creates an environment of uncertainty and acts as a form of disciplinary power to make them adhere to certain rules and norms, especially for those who are most financially dependent and fear the loss of income opportunities (Galière, 2020).

2. Information Asymmetries

   Workers were not given access to systems' crucial data, including the precises of delivery. Platforms hide the addresses of consumers and only gave the pick-up locations (the restaurants). The workers receive the address after they arrive at the restaurant and confirm that they have picked up the order. This limits their capacity to identify the most lucrative delivery since it hinders these alleged independent contractors from making educated judgments about the orders, they are taking Veen et al. 2019).

3. Performance Management

   Platforms warn employees that there would be negative consequences if their performance fell short of the requirements. They partially realized labour effort because employees do not understand these bureaucratic constraints fully, their working, or how they influenced workers' capacity to get continuous work. The performance

systems are 'black boxes' to the workers, and many of them believe that their accounts would be immediately cancelled if they failed to perform (Veen et al. 2019).

6. THE ILLUSION OF INDEPENDENCE

The idea of independent labour centres on people working for themselves as freelancers, independent contractors, or self-employed professionals as opposed to being regular workers of a business or organization. Independent workers work on a contract, project-by-project, or flexible basis, offering their services, expertise, or goods to a range of clients or consumers. In the gig economy, the term "worker independence" describes the level of autonomy and control that people have over their jobs. Gig labour gives flexibility and the capacity to take on brief jobs or projects, and is frequently assisted by digital platforms and applications. However, it can also raise concerns about the degree to which employees have agency, benefits, and rights. Independence in one's work comes from the choice of the type, time and place of one's work. However, it is believed that in case of independent work, when people leave the safety of an organization, they frequently face higher job demands as well as a frequent loss of the sense of community, predictability, and security (Ashford, et al., 2018).

While food delivery workers are technically independent contractors, the influence of algorithmic management challenges the notion of independence. At every stage of their employment, including order acceptance, route following, and performance review, workers are subject to algorithmic control. The lack of control that food-delivery workers have over algorithmic judgments and the competitive nature of ratings and reviews further weaken the idea of independence. Technical control systems and algorithmic work processes in the gig economy constrain workers' autonomy, promoting surveillance and powerlessness, despite their intended efficiency and productivity (Griesbach et. al, 2019).

7. CONCLUSION

Most scholarly attention on app-based platform-work focuses on the fact that the gig economy of food delivery has come to be defined by algorithmic management, which has shaped delivery drivers' perspectives and experiences. Although these platforms provide flexible employment options, the extensive use of algorithms in managing and guiding drivers' behaviour challenges the idea of independence. To maintain equitable, open, and empowering working conditions in the digital era, players in the gig economy, such as platform businesses, employees, advocacy organizations, and regulators, must consider the moral and practical ramifications of algorithmic management. The major problem continues to be striking a balance between the benefits of algorithmic efficiency and the requirement for worker autonomy and rights. The paradox of algorithmic control and worker independence in the food delivery gig economy revolves around the dual nature of digital platforms. While these platforms offer gig workers flexibility and autonomy, they also wield algorithmic control that can limit true independence.

Gig economy workers, like food delivery drivers, enjoy the freedom to set their schedules and choose their gigs, allowing them to balance work with personal obligations. However, behind the scenes, algorithms dictate work assignments, shift availability, and even earnings, influencing workers' choices and potentially reducing their autonomy. The disciplinary techniques of the platform force the workers to accept their poor working conditions and practise compliant behaviour (Orr et al., 2023). Employees are fearful and anxious about the responsibility of maintaining these ratings because even a small decline in reputation scores can lead to fare reductions, restricted access to customers, or even profile termination (Jamil 2020). Food delivery companies, authorities, and stakeholders must work together to create algorithms that maximize efficiency while adhering to ethical standards. This method will assist not just food delivery workers, but will also build a more sustainable and fair gig economy for all parties involved. The developing dynamics between rationality and normativity in algorithmic control in the context of the food delivery sector should be investigated more in the future.

The paper proposes a better understanding of the idea of independence and its connection to algorithms control situations. It advises researchers to closely think about the complexities of gig work and how technology affects them. Through individual and collect strategies of diversion, circumvention or resistance workers can exploit the control exerted by the platforms on them (Galière, 2020).

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

REFERENCES

Ashford, S. J., Caza, B. B., & Reid, E. M. (2018). From surviving to thriving in the gig economy: A research agenda for individuals in the new world of work. *Research in Organizational Behavior*, *38*, 23-41.

Barratt, T., Goods, C., & Veen, A. (2020). 'I'm my own boss…': Active intermediation and 'entrepreneurial'worker agency in the Australian gig-economy. *Environment and Planning A: Economy and Space*, *52*(8), 1643-1661.

Burawoy, M. (1979). The anthropology of industrial work. *Annual review of Anthropology*, *8*(1), 231-266.

De Stefano, V. (2015). The rise of the just-in-time workforce: On-demand work, crowdwork, and labor protection in the gig-economy. *Comp. Lab. L. & Pol'y J.*, *37*, 471.

Duggan, J., Sherman, U., Carbery, R., & McDonnell, A. (2021). Boundaryless careers and algorithmic constraints in the gig economy. *The International Journal of Human Resource Management*, 1-31.

Galiere, S. (2020). When food-delivery platform workers consent to algorithmic management: a Foucauldian perspective. *New Technology, Work and Employment*, *35*(3), 357-370.

Gandini, A. (2019). Labour process theory and the gig economy. *Human relations*, *72*(6), 1039- 1056.

Ge, H., Caverlee, J., & Lee, K. (2015). Crowds, gigs, and super sellers: A measurement study of a supply-driven crowdsourcing marketplace. In *Proceedings of the International AAAI Conference on Web and Social Media* (Vol. 9, No. 1, pp. 120-129).

Goods, C., Veen, A., & Barratt, T. (2019). "Is your gig any good?" Analysing job quality in the Australian platform-based food-delivery sector. *Journal of Industrial Relations*, *61*(4), 502-527.

Griesbach, K., Reich, A., Elliott-Negri, L., & Milkman, R. (2019). Algorithmic control in platform food delivery work. *Socius*, *5*, 2378023119870041.

Jamil, R. (2020). Uber and the making of an Algopticon-Insights from the daily life of Montreal drivers. *Capital & Class*, *44*(2), 241-260.

Jarrahi, M. H., Newlands, G., Lee, M. K., Wolf, C. T., Kinder, E., & Sutherland, W. (2021). Algorithmic management in a work context. *Big Data & Society*, *8*(2), 20539517211020332.

Kaine, S., & Josserand, E. (2019). The organisation and experience of work in the gig economy. *Journal of Industrial Relations*, *61*(4), 479-501.

Kellogg, K. C., Valentine, M. A., & Christin, A. (2020). Algorithms at work: The new contested terrain of control. *Academy of Management Annals*, *14*(1), 366-410.

Kitchin, R. (2017). Thinking critically about and researching algorithms. *Information, communication & society*, *20*(1), 14-29.

Lehdonvirta, V. (2018). Flexibility in the gig economy: managing time on three online piecework platforms. *New Technology, Work and Employment*, *33*(1), 13-29.

Lin, P. M., Au, W. C., Leung, V. T., & Peng, K. L. (2020). Exploring the meaning of work within the sharing economy: A case of food-delivery workers. *International Journal of Hospitality Management*, *91*, 102686.

Malik, R., Visvizi, A., & Skrzek-Lubasińska, M. (2021). The gig economy: Current issues, the debate, and the new avenues of research. *Sustainability*, *13*(9), 5023.

Mazzella, F., Sundararajan, A., D'Espous, V., & Möhlmann, M. (2016). How digital trust powers the sharing economy. *IESE Insight*, (30), 24-30.

Mehta, B. S. (2020). Changing nature of work and the gig economy: Theory and debate. *FIIB Business Review*, 2319714520968294.

Möhlmann, M., Zalmanson, L., Henfridsson, O., & Gregory, R. W. (2021). ALGORITHMIC MANAGEMENT OF WORK ON ONLINE LABOR PLATFORMS: WHEN MATCHING MEETS CONTROL. *MIS quarterly*, *45*(4).

Muldoon, J., & Raekstad, P. (2022). Algorithmic domination in the gig economy. *European Journal of Political Theory*, 14748851221082078.

Orr, W., Henne, K., Lee, A., Harb, J. I., & Alphonso, F. C. (2023). Necrocapitalism in the Gig Economy: The Case of Platform Food Couriers in Australia. *Antipode*, *55*(1), 200-221.

Popan, C. (2021). Embodied precariat and digital control in the "gig economy": the mobile labor of food delivery workers. *Journal of Urban Technology*, 1-20.

Schildt, H. (2017). Big data and organizational design–the brave new world of algorithmic management and computer augmented transparency. *Innovation*, *19*(1), 23-30.

Srnicek, N. (2017). *Platform capitalism*. John Wiley & Sons.

Srnicek, N., & Williams, A. (2015). *Inventing the future: Postcapitalism and a world without work*. Verso Books.

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

Van Doorn, N., Ferrari, F., & Graham, M. (2023). Migration and migrant labour in the gig economy: An intervention. *Work, Employment and Society*, *37*(4), 1099-1111.

Veen, A., Barratt, T., & Goods, C. (2020). Platform-capital's 'app-etite'for control: A labour process analysis of food-delivery work in Australia. *Work, Employment and Society*, *34*(3), 388- 406.

Wang, C., Chen, J., & Xie, P. (2022). Observation or interaction? Impact mechanisms of gig platform monitoring on gig workers' cognitive work engagement. *International Journal of Information Management*, *67*, 102548.