

Reshaping Labor Relations in the Platform Economy: A Comparative Study of Algorithmic Control in China and the United States

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Abstract: This study examines algorithm management in the platform economy, with a focus on food delivery platforms. It argues that such systems extend Taylorism, such as deskilling and centralized control, while introducing new elements of labor regulation, including implicit rules, pressure from multiple sources, and tracking beyond working hours. By comparing the situations in the United States and China, the article demonstrates that algorithmic control is mediated by distinct institutional logics. In the United States, enterprises set rules to consolidate their power and make work unstable, whereas in China, the government intervenes to achieve stability and common growth. However, both systems allow algorithms to dominate the workforce, underscoring the need for stronger protective measures to correct these imbalances.

Keywords: algorithmic management; platform labor; labor control; comparative study; China–United States

1. Introduction

Across the past several years, the rapid expansion of the platform economy has altered the structure of labor relations. Platforms including Deliveroo, Uber Eats, and Foodora outsource work to independent contractors, who are then required to carry out a range of delivery tasks on the firms' behalf. Even if this arrangement offers certain advantages to contractors, an expanding body of scholarship has drawn attention to the harmful effects that often accompany this labor relationship between platform companies and the contractors on whom they rely [1–3].

Among the defining features of platform economies is the deployment of algorithmic management systems to automate numerous labor processes. By means of such systems, labor can be supervised more efficiently without the need for direct, person-to-person oversight of each individual worker. More than efficiency is involved, however: control over the workplace and over laborers appears also to be reallocated toward the platform itself. Within the food delivery sector specifically, Huang identifies two principal techniques embedded in these platform algorithms—virtual labor organization and algorithmic process control. Working in tandem, these mechanisms allow the platform application itself to manage food delivery contractors [4,5].

Yet the existing research does not converge on a single interpretation of how algorithmic management affects food delivery contractors. Huang argues for an extensive degree of platform control over these workers. Wood et al. and Popan [2,6], on the other hand, point to the somewhat counterintuitive ways contractors seem

able to resist the control exercised through algorithms. Useful as both lines of interpretation are, each appears to leave underexamined the broader frameworks through which these platforms are regulated.

Against that unresolved tension in the literature, this article seeks to clarify how such platforms are regulated by developing a framework attentive to both the adaptable and the stable dimensions of platform control over contractors. Braverman's account of labor deskilling is especially instructive here, as it helps illuminate the resemblance between platform-based algorithmic control of food delivery contractors and Taylorist modes of management. A comparative analysis of regulation in the United States and China, focused on food delivery contractors and the rules governing them, further shows that the degree and character of governmental involvement noticeably shape the extent of control platforms exercise over those contractors. The article therefore aims to show how algorithmic control over food delivery contractors is conditioned by the regulatory structures of each country and, by extension, the social order those structures are meant to serve [7].

2. Literature Review

2.1. *Algorithmic Management as a Mode of Labor Control*

A substantial literature identifies algorithmic management as the defining feature of labor in the platform economy. In traditional industries, by contrast, workforce supervision has typically depended on direct human oversight to manage labor. Under algorithmic management, the relevant decisions are made through automated systems instead. Across platform-based work arrangements, algorithms allocate tasks and regulate workers' activities. Efficiency may increase under such arrangements; worker control over the manner of performing that work, however, is narrowed.

Wood et al., discussing a range of digital labor platforms, including Upwork and Freelancer.com, describe the flexibility available to workers who enter these platforms. That flexibility, however, sits alongside low pay, social isolation, extended working hours, and worker fatigue. Although such workers may be formally classified as independent contractors, the algorithms governing these platforms determine the work carried out through them. Over the labor process itself, their influence remains minimal [6].

In Huang's account, the algorithmic management of labor appears also in China's food-delivery platforms. Companies such as Meituan and Ele.me rely on artificial intelligence to manage food-delivery workers. Crucial information required for the efficient fulfillment of food orders is controlled exclusively by these companies. The labor process encompassing delivery workers, restaurants, customers, and even the government agencies regulating the platforms is organized by these firms. Even so, it is artificial intelligence and algorithmic systems that manage that Labor day to day [5].

Taken together, the literature discussed in this article indicates that algorithmic management exercises substantial control over workers' labor in the platform economy. This line of argument aligns with Braverman's theory that automation functions to divide and control labor [8].

2.2. *Algorithmic Control, Worker Experience, and Behavioral Adaptation*

Even with broad agreement among scholars that algorithms impose control within these work environments, disagreement remains over what that control does to worker autonomy. On one side are scholars who treat such control as pervasive—indeed, effectively absolute—in its consequences for autonomy. Huang's research, for example, shows that the algorithms used by companies providing goods to customers compel delivery riders to comply with algorithmically imposed time constraints; failing compliance, the riders may be punished for not adhering to the algorithm [5].

Yet, not all scholars read these work environments in exclusively deterministic terms. Within those settings, workers are still described as capable of mobilizing whatever autonomy remains available to craft counterstrategies against imposed control. Wood et al., for example, indicate that workers carrying out deliveries for platform companies can choose which orders to accept and which routes to follow in getting goods to their destinations (a seemingly narrow discretion, but a meaningful one in practice). Taken together, such findings suggest that, although worker autonomy may be narrowed by the incorporation of algorithms into these

platforms, some room for autonomous action nonetheless persists, including the development of strategies that push back against those controls [6].

Against that interpretation, a separate line of scholarship argues that worker autonomy on these platforms is, in fact, substantially constrained. Meijering et al., for instance, show that the algorithms used to govern food delivery work enable companies to scale services rapidly while simultaneously supervising large pools of workers [9]. More specifically—and this is where the argument sharpens—these algorithms appear to regulate not merely what workers do, but also how food deliveries are carried out from restaurants to eaters [10]. By this reading, then, the implementation of algorithmic systems limits worker autonomy rather than simply structuring it. Particularly revealing, too, are the counterstrategies that workers themselves develop, since those responses can be read as evidence of constraint rather than freedom. In Bucher et al.’s discussion of Fiverr, workers on the platform adopted service behaviors described as “anticipatory compliance,” adjusting prices and other service characteristics so that their offerings would be accepted by the platform’s algorithmic systems, even when the reasons for those adjustments were not transparent to them [11]. That pattern of conduct, modestly but unmistakably, points to autonomy that has been circumscribed and brought under platform control.

2.3. From Taylorism to Digital Governance: Extending Control Beyond Paid Labor

Several scholars have interpreted algorithmic management as a digital reformulation of ideas commonly associated with Taylor. Chinoy, drawing on the notion of “hidden labor,” shows how algorithms extract value from workers through unpaid activities, including waiting for tasks to be assigned and completing tasks in order to receive ratings [12]. Unlike management systems aimed primarily at workers’ paid labor, these algorithmic arrangements reach into both paid and unpaid labor. Productivity may well be intensified under such a system; the trade-off, however, is borne in the form of reduced autonomy and diminished well-being among those working in these digitally mediated spaces.

In Cini’s account, the invisibilities of labor in the tech industry is directed precisely at the hidden and unpaid labor performed by workers [13]. Those workers are compelled to operate within algorithmic systems that extract the surplus value generated by that labor. For all their efficiency in tracking laborers and rewarding task completion, these systems impose a cost—namely, a reduction in worker freedom and satisfaction (an efficiency gain, in other words, with a clear human downside). Newlands’ study of the psychological effects of algorithmic management further indicates that constant monitoring on digital platforms places substantial strain on workers’ psychological state, rather than producing the kind of psychological adjustment that may occur in more traditional workplaces [14].

Across these studies, what becomes visible is a shift from human supervision to machine-based management of labor. Although algorithmic management increases the efficiency of workers and of the processes they carry out, that increase is achieved at a cost: diminished autonomy and reduced well-being for those performing labor on technological platforms.

2.4. Algorithmic Governance, Legal Institutions, and Emerging Gaps

Beyond workplace dynamics in the narrow sense, a steadily expanding body of scholarship situates algorithmic management inside the broader architecture of algorithmic governance. In Muldoon and Raekstad’s formulation, the term “algorithmic domination” captures how automated managerial systems operate on platforms while, crucially, displacing substantial risks and costs onto workers [15]. On platforms such as Uber and Deliveroo, to take the routinely cited examples, instrumental features including surge pricing and penalty mechanisms are used to recalibrate worker conduct within the firm [16].

From the standpoint of legal regulation, a separate difficulty comes into view. As Xie notes, courts in China have often refused to recognize an employment relationship between platforms and their drivers, a position likely tied to the flexible character of the drivers’ working arrangements (though the case law, as is often true in this area, is not entirely static) [17]. In some decisions, admittedly, elements of an employment relationship have been acknowledged; across the country, however, such rulings have remained inconsistent rather than uniformly adopted.

More recently, another strand of the literature has identified workers who adapt to these algorithmic systems and, in some cases, push back against them. Cant and Meijerink and Keegan, for example, document several instances in which drivers formed networks with one another and developed new strategies to counter the algorithms managing their work. What follows from this, at minimum, is that at least some such algorithms appear to leave room for certain drivers to exercise agency within their roles [9,18].

3. The Core Characteristics of Algorithmic Management and Its Differences from Traditional Management

A considerable body of scholarship addresses algorithmic management as a reconfiguration of labor and managerial control. In contrast to conventional worker supervision, algorithmic management rests on an often-invisible form of control embedded in code, which continuously captures data about workers. Through proprietary algorithms, orders are allocated to workers and, in parallel, their performance is evaluated through customer feedback. For poor performance, sanctions are imposed automatically, without any need for human review [19].

Although the absence of direct supervisors can make the system appear decentralized, the research points in the opposite direction: within platform economies, managerial control is, in practice, intensely centralized. At the level of code—code created, owned, and modified by the platforms themselves—all meaningful control is concentrated [16]. Hidden from workers are the criteria by which rewards and punishments are distributed, leaving them unable to secure explanations for why particular outcomes are assigned to them. It is in this setting that scholars describe a “black box” condition, one in which workers are left to infer—often imperfectly—the intentions of management [18, 19]. Under such conditions, worker behavior must be adjusted to align with managerial expectations so as to provide the forms of service the algorithms demand [19].

Across the literature on labor in the digital age, algorithmic management has become a major point of analytical attention. Still, Braverman’s [8] now-classic account of scientific management in the early twentieth century remains among the most influential reference points for understanding it. Both systems depend on a theory of the labor process and of how that process is to be managed; the difference is institutional as much as technical, because scientific management was directed through human supervisors, whereas algorithmic management is enacted through the software infrastructures of digital platforms. With digital platforms, control over workers can be intensified in real time and across geographic distance (indeed, even beyond the hours workers are formally expected to labor) [20]. Current research, taken together, also suggests that this managerial form places workers under both material and psychological strain, thereby distinguishing it from earlier bureaucratic modes of management.

4. Algorithmic Governance in the Platform Economy: Structural Mechanisms and Labor Implications

Building from these managerial characteristics, scholars have increasingly turned to the notion of algorithmic governance. More specifically, algorithmic governance extends beyond the employer’s role through the automation of management functions. In this account, the arrangement has been characterized as a form of algorithmic domination, one through which the company consolidates control over the worker and, at the same time, offloads or manages the risks of labor [15]. On the platforms themselves, mechanisms such as gamified reward systems and customer ratings are used to shape workers’ conduct [16].

Across the scholarly literature on food delivery platforms, the practical operation of algorithmic governance has been documented in some detail. In China’s food delivery sector, for example, workers describe their labor as being structured by invisible algorithms (a formulation that appears repeatedly in this literature). Between 2018 and 2022, tools introduced to shorten delivery times reduced those times by more than 40%. That decrease was substantial. Yet close examination of these tools shows that they have also been associated with an increase in traffic accidents among food delivery riders [5,21]. As Huang argues, accident risk is shifted by the platforms onto the worker. Because late deliveries trigger punishment, workers are compelled to push themselves in order to meet platform-imposed deadlines; under such conditions, they may violate traffic laws and forgo physical breaks from cycling so as to avoid penalties (an apparently small behavioral adjustment, though hardly a trivial

one in practice). From this, Huang concludes that the algorithms exercise near-total control over workers [5].

Set against that emphasis on domination, other scholars point to a countervailing effect: workers' limited capacity to dominate, or at least outmaneuver, the algorithms. As discussed by Wood et al. and Cant [6, 18], some food delivery workers refuse algorithmically assigned orders, choose alternative routes for deliveries, and rely on practices such as information-sharing with other workers traveling along similar routes to lessen the algorithm's hold over their labor process. Such tactics, these scholars suggest, emerge in the spaces left open within algorithmic domination of workers. Even so, the scholarly position in these debates remains fairly consistent: because the work itself is unstable, the scope for worker counter-strategy is narrow—present, certainly, but markedly constrained.

Taken together, the literature converges on a range of adverse outcomes for workers, including unstable incomes, physical fatigue, social isolation, and anxiety [3, 6]. In parallel, many scholars observe that legal systems have struggled to keep pace with food delivery platforms. Under most statutory and regulatory approaches, these platforms are treated as neutral third parties rather than as employers [22]. Although a small number of countries have enacted laws recognizing the employment-like features of the relationship between workers and platforms, the platforms nevertheless continue to exercise dominant control over workers through digital means.

5. Divergent Institutional and Regulatory Responses in the United States and China

Although the technological platforms operating across world regions display broad similarities, the institutional arrangements embedded within particular countries have produced markedly different regulatory outcomes for those same platforms. In part, those divergent outcomes stem from country-specific understandings of what role government should play when conflicts arise between platform firms and platform workers.

In the United States, regulation of algorithmic management firms and platforms has, by and large, reinforced the authority of those firms. Companies such as Uber, notably, have succeeded in classifying drivers as independent contractors, a designation that allows avoidance of obligations such as minimum-wage payment and the provision of social insurance to those workers. In California, Assembly Bill 5, enacted in 2019, requires companies to apply the ABC test in determining whether a worker qualifies as an independent contractor [22]. Yet despite that statutory shift, Uber and comparable firms devoted substantial resources and political effort to securing passage of Proposition 22 in California, which preserves platform drivers' status as independent contractors, while also requiring access to benefits such as health insurance and sick leave—but only where platforms meet certain size thresholds [23, 24]. Complicating the regulatory picture further, Proposition 22 was upheld by the California Supreme Court, and parallel ballot measures or propositions have since been adopted in other U.S. states. The practical consequence is straightforward. Across the United States, regulation of platform companies remains limited, and drivers may be deactivated by those companies without prior notice [25].

By way of contrast, China moved quickly to codify regulatory controls over algorithmic management firms and digital platforms, a response tied to concerns that continuation of prevailing practices could aggravate social unrest domestically. At the core of these interventions lies an effort to curb the power of platform companies so as to limit social instability while also advancing the state's stated objective of "common prosperity" across the citizenry. After several high-profile incidents in 2021 brought public attention to the deaths of Chinese delivery riders, regulations targeting the country's platform sector began to be introduced. In July 2021, seven government ministries issued a document titled the Guiding Opinions on Protecting the Labor Rights and Interests of Workers in New Forms of Employment; from that point forward, implementing rules followed, requiring written employment agreements between companies and workers, social and occupational insurance coverage, designated rest periods, and minimum wage payments for those workers [26]. Over the same period, record fines were imposed by the State Administration for Market Regulation on Meituan and Ele.me for abusive scheduling practices, and greater transparency was demanded in algorithmic punishment mechanisms, including advance notice of major rule changes [27]. At the local level, more specific measures were then piloted: per-order minimum payments (typically 5–7 RMB), relaxed delivery deadlines during extreme weather,

blueuced penalties for late arrivals, and the establishment of thousands of physical “rider stations” intended to support workers’ day-to-day needs [28]. By 2024, city-level minimum-income guarantees, heat-stroke subsidies, and basic “explanation” interfaces identifying the main factors affecting order assignment had been introduced by most major platforms [29,30]. The quantitative evidence points in the same direction: between mid-2021 and late 2023, average earnings for full-time riders increased by 18% to 29%. Meanwhile, occupational-injury insurance coverage climbed to roughly 95% in first-tier cities [31].

Even so, the relevant scholarship continues to caution that these reforms stop short of dismantling algorithmic governance at its foundations. Independent unions remain prohibited, while platform-based unions operate chiefly as extensions of state policy rather than autonomous vehicles for worker representation (Vallas & Schor, 202). As for the core architecture of algorithmic governance—worker rating, monitoring, and deactivation—it remains embedded in labor relations, though now under regulatory oversight instead of existing wholly without it.

Two distinct regulatory models govern the use of algorithms in labor relations. In the United States, a market-oriented approach prevails, one that grants managers substantial autonomy in the organization and control of labor. By contrast, in China, a state-directed framework is in place; it allows the government to move quickly in improving workers’ material conditions (at least at the level of policy intervention) while simultaneously constraining the authority of independent labor organizations. Across both institutional settings, algorithmic management functions as an instrument of labor domination. Set side by side, these two models of algorithmic labor management strengthen the central claim that algorithmic management is, in essence, a mechanism for dominating labor.

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