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Bureaucratic control across enterprise boundaries: labor organization and the control of the online car-hailing platforms

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Abstract

This article shows that the online car-hailing platforms, supported by the digital technology of information matching, are more than some "flat" market organizations but are essentially bureaucratic organizations that are market-oriented and rely on business rules, digital technology, and third-party management institutions. By taking advantage of its monopolistic position, the car-hailing platform has built a bureaucratic control system with multilayer hierarchies in which various market players outside the enterprise participate. The platform first organizes production in a cooperative way by setting up external jobs, then guarantees that both drivers and leasing companies will follow the business rules and improve predictability. Finally, the platform uses digital technology and leasing companies to realize driver management and rule implementation.

Keywords: Platform enterprise, Bureaucratic control, Enterprise planning, Leasing company

Introduction

With the rapid development of information technologies, such as the internet, big data, and cloud computing, internet-based platform enterprises have largely subverted the traditional modes of organizing labor (De Stefano 2016; Wu and Yang 2018). These platform enterprises not only complete work tasks "cut" by technology based on the social division of labor but also bring external partnerships into enterprise management (Kaine and Josserand 2019). The new mode of organizing labor reduces labor and structural costs for platform enterprises (Tassinari and Maccarrone 2020) and helps them simultaneously realize scale expansion. Taking one of the leading enterprises in the online car-hailing industry as an example, since its establishment in 2012, the W platform has created jobs known as the "online car-hailing driver" and the "business partners in service of drivers" outside the company. It has also employed a considerable number of employees, among whom the number of ride-hailing drivers itself exceeds more than 30 million.

How did this online car-hailing platform realize its organization and effective management toward a tremendous number of drivers within just a few years? The literature mainly focuses on how platforms achieve their management from the perspective of labor control but ignores labor organization in the early phases. Current research emphasizes the role played by digital technology in the replacement of managers within the organization (Kellogg et al. 2020), which facilitates enterprise management in a more detailed (Rosenblat and Stark 2016) and de-hierarchical way. However, these findings may not be sufficient to solve all puzzles in reality. For instance, how can nontransparent algorithms discipline car-hailing drivers with relatively low educational attainment? How can platform companies relieve the confusion, anxiety, and helplessness of car-hailing drivers brought by algorithms (Kellogg et al. 2020) and dissolve the homogeneous drivers' collective resistance due to overlong and highly intensified labor conditions with inadequate social insurance (Edwards 1979: 128–129)? Taking the online car-hailing platform W in T City as a case, this article attempts to answer the following two questions. How was the considerable number of car-hailing drivers organized and effectively managed by the online car-hailing platform in quite a short period? Can bureaucratic control be replaced by technical control, or have digital technologies penetrated the verticalized bureaucratic system?

Labor process theory: from the industrial economy to the platform economy

The core concern of labor process theory is capital control and workers' resistance in the surplus value production process. Marx proposed that workers created surplus value in the process of commodity production. However, the labor force purchased by capitalists is not the amount of labor agreed upon by both parties but the potential labor capacity within an agreed period (Braverman 1978: 50–51). Therefore, the labor process must be controlled since it is uncertain whether the potential labor force can be transformed into actual labor, which creates surplus value. Retrospectively, studies on the labor process in the era of the industrial economy generally analyze the capital's strategy in labor control from three major perspectives: the organizational, the technological, and the ideological perspective.

Three major perspectives on labor control in the era of the industrial economy

Marx (2004) proposed the basic analytical framework of labor process studies in the first volume of *Capital*, which analyzed the ways that capital seizes relative surplus value from both organizational and technological perspectives. The organizational foundation for capital to control labor is cooperation based on labor division. The commodity production process has been divided by capitalists into many work stages, each of which is assigned to certain workers to complete, and the entire commodity production can be fully completed only through workers' cooperation in different work stages. In addition, machines serve as the technological foundations for capital to control labor, as they not only replace workers' skills and physical strength but render the labor process subjective rather than objective obedience. Meanwhile, machines also increase the reserves of industrial workers, weakening workers' resistant capacities but strengthening capital control (Wang 2011).

Following Marx's analytical framework, Harry Braverman first criticized Taylor's scientific management principles from the organizational perspective in the first place and then analyzed the impact of machine production on labor from the technological perspective. In Taylor's opinion, scientific management is not only an innovation of capital controlling and organizing labor but also an advanced form of labor division proposed by Marx, which refers to the fact that labor divisions between mental and physical power within enterprise lead managers to be specifically responsible for completing the "design" of work, while workers are only required to strictly "implement" manager's work design or arrangements (You 2006). Moreover, scientific management is not restricted to the group of industrial workers who witness such a division between mental and physical power. Instead, it also exists among the groups of managers and service workers. Braverman deemed that workers become only "a living tool of managers" with their working skills degenerated under the "separation of concept and implementation" (Braverman 1978: 108). Therefore, he criticized scientific management as some "pseudo-science" with no humanity under its cloak of science. He also believed that machinery automation would further decrease the workers' skill level and reduce their control over the labor process (1978:171–172).

Richard Edwards put forward the concepts of "technical control" and "bureaucratic control" from technological and organizational perspectives. Edwards pointed out that the capitalist control system generally consists of three elements: guidance, evaluation, and discipline (Edwards 1979: 18). So-called technical control refers to capital embedding its control system into materialized technological structures. The assembly line can guide workers to work and set the work rhythm, and numerical control with computer technology can supervise and evaluate the workers' working process. However, technical control cannot fully complete the discipline of workers, which consequentially needs to be supplemented with the introduction of bureaucratic control (Edwards 1979:115–125). Bureaucratic control refers to embedding the control system into organizational and social relations, which means that work guidance, performance evaluation, and rewards and punishments should all follow the "company rules" or the "company policy." Bureaucratic control reveals the characteristics of dehumanization, as it locks the operation of internal power within an enterprise into some institutional cage. In addition, based on its classified management of workers through salary grading and a system of reward and punishment, capital has shaped workers' behavior and driven them to pursue individual interests in the name of personal identities to prevent the occurrence of collective actions (Edwards 1979: 145).

Michael Burawoy brought workers' subjectivity into the study of the labor process as he examined how workers perceive the strategies of capital control and how they form their subjective identities from the ideological perspective (Burawoy 1979). Before Burawoy, scholars including Marx and Braverman mainly regarded the labor process as a mandatory process when labor is transformed into something that creates surplus value. However, in Burawoy's opinion, the transformation process should be considered as the voluntary consent of workers. He proposes three mechanisms that cause workers to agree, namely, the "piece rate wage system," the "internal labor market," and the "internal regime." The "piece rate wage system" attracts workers to participate in catch-up games actively and transforms the conflicts between labor and capital into internal conflicts

among workers. The "internal labor market" refers to a set of procedures in promotions or job transfers and the rules to price labor within the bureaucratic organizations, which not only reduces the labor-capital conflicts but also improves the workers' commitment to the organization. The "internal regime" refers to the collective bargaining schemes and appeal institutions, which maintain the essence of capitalist ownership and labor-capital relations.

The missing organizational perspective in the era of the platform economy

As human society has left the era of the industrial economy to enter the era of the digital economy, especially with the emergence of platforms that match both the ends of labor supply and demand with the aid of digital technologies such as the mobile internet, big data, and cloud computing, the modes of organizing labor and employment in traditional enterprises have been largely subverted (Wu and Yang 2018). Platform companies adopt the "Asset-Light" strategy to outsource heavy assets, including labor (Kaine and Josserand 2019). Online car-hailing drivers are regarded by the platform as "independent contractors," as they take orders from the platform with their own production tools, share the revenues paid by passengers with the platform in proportion (Josserand and Kaine 2019), and enjoy their work autonomy to some extent (Wu and Li 2018; Hall and Krueger 2018). Due to the immediacy and uncertainty of consumers' travel demand, platform enterprises must meet consumers' needs by ensuring a continuously stable supply of online car-hailing drivers when they match the transactions in the travel service market to make their profits (Wu and Yang 2018). Therefore, our question concerns how platform enterprises manage the labor force outside their company to meet consumers' immediate yet uncertain needs. That is, an important issue is how platforms manage their "independent contractors" by crossing the boundaries of enterprises.

The literature mainly focuses on platform companies' labor control strategies from a technical perspective, which scrutinizes how platforms have controlled workers through digital technologies, such as artificial intelligence (AI), big data, and algorithms. At the macro level, the platform develops the market through financing in the capital market and continuously optimizes the algorithm with the aid of big data thus realize monopolies on information and data as the means of production. The imbalance between information and power forces workers to rely on the platform and be controlled and exploited by the platform (Rosenblat and Stark 2016; Ren and Wang 2019; Qi et al. 2019). At the micro level, Taylor's scientific management has been embedded into the digital algorithms of platforms (Aloisi 2016; Staab and Nachtwey 2016). Such a "Digital Taylorism" (Chen 2020a) helps the platform realize its detailed or fine management of workers' behavior (Feng and Zhan 2019). The platform not only redistributes the control power through digital technology (Chen 2020b) but also instantly collects and processes workers' behavioral data in batches. In addition, the collected data and customers' evaluations can be exploited as the basis for rewarding and punishing workers (Rosenblat and Stark 2016; Liang 2017; Veen et al. 2020) and maintaining the labor order for the platform (Chen 2020b).

Therefore, scholars have proposed that digital technology has replaced the role of managers in bureaucratic organizations and has realized the de-hierarchy of organizational structure. They have compared Edwards' structural control with algorithmic

control; they consider algorithmic control a new rational control mode different from technical control and bureaucratic control. In addition, they have proposed the "6R" control mechanism of algorithm control, which refers to guiding work through constraints and advice, evaluating work through scoring and ranking, and disciplining through elimination and reward (Kellogg et al. 2020). In addition to the technical perspective, studies from the ideological perspective scrutinize how platforms have formed the subjective identification of workers through salary, scoring, and other mechanisms (Wu and Li 2018; Xu and Zhang 2019).

However, the research mentioned above cannot fully explain a few problems in practice, such as how workers are organized into complex algorithmic control systems, how they are disciplined by algorithms, how digital technology can resolve the negative emotions of workers, and how workers' consciousness of collective resistance can be dispelled. In addition, current research can hardly answer theoretical questions such as what serves as the foundation of legitimacy in the management of workers through digital technologies. Will digital technologies infiltrate the bureaucracy?

Other issues under-examined in current scholarship lie in the following: first, the role of digital technology in labor control is confused with the role of rules; second, the efficacy of digital technology in labor control has been exaggerated, while the role of third-party institutions has been deliberately avoided. Therefore, Lei (2021) argued that in addition to technology, platforms' labor control should be understood as multifaceted. She proposed the concept of "platform architecture" to discuss the regulatory role of technology, law, and organization during the labor process. As she pointed out, the service platform often adopts both franchising and cooperation with the site to implement a key performance indicator (KPI) assessment toward site management to ensure a stable labor supply. The sites will sign labor contracts with riders and will serve as employers to manage riders by manually adjusting their orders and resolving their complaints toward the algorithm. Although Lei's research goes beyond the mainstream technological perspective by exploring the role played by sites in labor control, it still fails to clarify the relationship among the three parties known as technology, organization, and laws.

In addition, from the empirical perspective, no labor relationship exists between online car-hailing drivers and leasing companies; therefore, the conceptual framework may not be applied to explain how leasing companies control drivers to ensure the stability of labor supplies. While scholars have mentioned the role of third-party organizations in technological control, such as domestic work companies (Liang 2017), online car-rental companies (Qi et al. 2019), the labor unions of live-broadcasting platforms or multichannel networks (MCNs) (Xu and Zhang 2019), and online food delivery sites (Li and Jiang 2020), they generally fail to explain either the specific relationship between internet platforms, third-party institutions, and workers or the relationship between technology and third-party institutions.

Accordingly, although labor process theory has focused on the labor control strategies from the organizational, technological, and ideological perspectives, recent studies that concern how platforms control labor mainly emphasize the technological perspective. However, the emergence of third-party institutions requires us to supplement the research on platform labor control to explore other types of power relations

that may affect the labor process from an organizational perspective, which would help us better understand platform labor control.

Case selection and research method

In 2016, the Chinese government strengthened its stance toward the online car-hailing industry and required all drivers operating through platforms to apply for the "online car-hailing driver's license" (OCDL) and all vehicles operating on platforms to apply for the "online car-hailing transportation registration permits" (OCTRP). The authors selected T City as the field site because T City was a key region for implementing a three-year environmental protection plan initiated by the State Council. The T City Government required that all online hailing vehicles must be replaced with new energy vehicles by the end of 2020, meaning that only new energy vehicles can receive the OCTRP. The leasing companies were thus involved in cooperation with the local government in the early stage of policy implementation to get priority for approving all vehicles owned by leasing companies, which made the leasing companies the main providers of the cars that obtained the OCTRP. Leasing companies generally recruit drivers by selling the cars with the OCTRP and therefore become an important institution to assist the platform in the offline management of car-hailing drivers.

The authors chose the W platform as the main research object because, first, the W platform has an absolute advantage in the market share regarding the number of operating vehicles and the number of cooperative leasing companies in T City. By March 2020, 18 platforms obtained operating licenses for online car-hailing in T City, among which the volume of daily orders from the W platform accounted for more than 85% of the total volume in the whole city on average. Furthermore, the number of hailing vehicles on the W platform accounted for more than 65% of the total vehicles, and the number of cooperative leasing companies with the W platform reached 40. These statistics all far exceed those of other platforms. Second, since its establishment, the W platform has set up external working posts outside the company to outsource the service provided to passengers and car-hailing drivers, which forms a cooperative relationship between leasing companies and the platform. The W platform has set up posts such as the "car manage-service partner" (CP) and "driver manage-service partner" (DMP) to transfer functions such as driver recruitment and vehicle and driver management to the leasing companies. This mode of organization has turned out to be very successful in practice and has become a model for other platform enterprises in the industry to learn from or emulate.

The W platform has maintained cooperative relationships with leasing companies since it entered T City in 2014. At first, the leasing companies were only responsible for recruiting drivers, but with the change in the national regulations regarding the online car-hailing industry afterward, the leasing companies gradually began to assume functions to manage vehicles and drivers. The duty of CP posts is mainly to recruit drivers and manage licensed company vehicles responsible for annual vehicle inspection and the operation of insurance payments. The duty of DMP posts is to assist the platform in managing drivers, including managing their driving behavior and providing special training to drivers. The W platform chose excellent leasing companies based on the performance of CP posts to let them assume DMP posts simultaneously. Thus, this study

will mainly focus on the role of the leasing companies undertaking DMP posts (hereafter referred to as "leasing companies") in platform labor control.

The data of this study come from participatory observations and in-depth interviews. Since October 2019, when the author entered the field, 68 online car-hailing drivers have been interviewed by the author as passengers. In addition, the author also took a 3-month internship to work at the M leasing company (hereafter referred to as "M company"), which undertakes the DMP post functions. The M company initially cooperated with the W platform in selling the licensed company vehicles to drivers for profit. As a participant observer, the author's main work was to assist Ms. Miao, a "driver service manager" of the M company whose job is to help the W platform manage car-hailing drivers, teach drivers how to use the software, and answer their questions in the work process. At the same time, the author also helped Ms. Miao produce a driver management summary and submit it to the W platform according to the requirements of the platform.

During the internship within the M company, the author observed the process of managing and being managed among the three parties—the W platform, the M company, and the online car-hailing drivers. Meanwhile, the author also interviewed another four "driver service managers" (hereafter referred to as "service managers") of the M company, who are subordinate to the driver management service department of the W platform's branch in T City. In these interviews, the author learned about their strategies and methods of managing online car-hailing drivers. In addition, the author interviewed eight head operators of leasing companies on how the platform manages leasing companies and how leasing companies manage online car-hailing drivers. The head operators of leasing companies told the author how the platform managed their company unfairly through various enterprise rules and expressed their dissatisfaction with the W platform. All of the above in-depth interviews lasted between 1.5 h and 2 h. To ensure academic norms, the authors anonymize all the names of the people and companies involved.

Platform: a builder crossing the boundary of enterprises with a bureaucratic control system

Weber (2019a: 401) regards bureaucracy as "the purest type in exercising legitimate authority." The exercise of legal authority depends on rationality, that is, "the belief in the legitimacy of established rules and the right of those who have authority to give orders according to these rules (legal authority)" (Weber 2019a: 396). The core feature of bureaucratic control is that the organizational operation depends on impersonal organizational rules (Edwards 1979: 140), and the organizational rules are implemented by the managers (Weber 2019a: 398). Organizational rules may not only define the qualification, the work contents, the jurisdiction, and the reward and punishment behaviors of each position but also define the hierarchical relationship, which indicates that "each lower level of official position should be controlled and supervised by a higher level of official position" (Weber 2019a: 399).

With the aid of enterprise rules, digital technology, and leasing companies, the W platform has built hierarchical control systems outside the company to manage the car-hailing drivers. As its first step, the W platform utilizes enterprise rules to set up positions such as "online car-hailing drivers" and "service partners" outside the company

to complete the labor division and stratification among its cooperative partners. Second, the W platform utilizes enterprise rules to guide and evaluate drivers' behaviors and enforce the reward and punishment on leasing companies to ensure the consistency between partners' behavior and the platform's interests. Finally, with the help of digital technology and leasing companies to enforce the enterprise rules, the W platform achieves its management over the order of driver labor.

Enterprise rules are the core of the bureaucratic control of the W platform, which can be expressed in two forms: the first form is the agreement on cooperation with its attached documents, and the second form refers to regulations, platform rules, policies, and normative documents. The first form clarifies the legal and hierarchical relationship among market subjects, defines the responsibilities of posts and jobs, and determines rights, obligations, and liabilities for breach of contracts. The second form guides the daily working behavior of drivers and leasing companies, sets work assessment indicators, and defines behaviors and measures in terms of reward and punishment. Notably, compared with civil contracts and regulations in traditional enterprises, rules implemented in the W platform lack consensual autonomy and democratic procedures. They are unilaterally determined and standardized by the W platform and are designed to constrain partners' behaviors. Market participants only have the right to choose whether to cooperate or not but have no right to negotiate or formulate the rules. This article employs an analytical framework based on Edwards' three elements of the control system and attempts to discuss how the W platform guides, evaluates, and incentivizes the drivers and leasing companies through its implementation of enterprise rules.

Regulating the work behaviors of online car-hailing drivers

Clarifying responsibilities, obligations, and standards of work

Before starting service on the platform, drivers must sign an agreement with the W platform and register as platform users. The agreement consists of 12 parts, including "account registration and user qualification," "service use and code of conduct," and "liability for breach of contract." The agreement defines the civil juristic relationship between the information providers and the users, stipulating the drivers' performance conditions, work responsibilities, and rights and obligations. Among them, the job duties of online car-hailing drivers are to provide transportation services for passengers in a timely and safe way. Part of the drivers' obligations are to "strictly abide by the agreement, the platform rules, and other relevant agreements signed between the business parties." In addition, drivers' obligations include stipulations such as "in case of violating agreement or platform regulations, the platform has the right to take measures such as warning, suspension of service, termination of service, or cancellation of accounts based on the severity of violation behavior." This allows the W platform to set up its enterprise rules on evaluation and reward and punishment.

In addition to the agreement, to ensure the stability and predictability of the driver's work quality, the W platform has formulated a variety of rules, such as the *"overall guidelines of the W platform operating rules," "general guidelines of the W platform," "safety rules," "special rules on customers' rating,"* and *"explanations of complaint and appeal procedures."* These rules can be divided into two categories. One is the general rules represented by the *"overall guidelines of W platform operating rules,"* which is similar to an

employee manual in traditional enterprises. Such rules define the level and scope of various rules in the enterprise regulation system and specify the code of conduct, responsibility due to violation, and measures related to other business scenarios. In contrast, the other type of rules are specialized rules, as represented by the *"special rules on customers' rating,"* the *"rules of the achievement score calculus,"* and the *"safety rules,"* which are set and supplemented by the platform regarding specific products under various business scenarios and define the drivers' work code of conduct, rights and benefits, liability in breaching the contract, and the appeal measures.

Taking the workflow of online car-hailing drivers when picking up and seeing off the passengers as an example, the safety rules and supporting instructions establish the service standards for the drivers, which guide the drivers' work behaviors in detail to ensure that passengers will be picked up safely and smoothly. First, the driver must stop on the passengers' front side if the passenger arrives earlier; otherwise, the driver must contact the passengers in advance to inform the passenger where the vehicle stops and waits. Second, the driver needs to check the last digits of the passenger's mobile phone number, tell the passenger to fasten the safety belt, and check whether the surrounding area of the vehicle is safe and whether the door has been closed before the driver may slide the apps on the mobile phone to start the journey. Finally, after arriving at the destination, the driver should stop the vehicle along the roadside, tell the passengers to take all their belongings with them, and pay attention to the cars behind him before he may slide the apps on the mobile phone to end the whole journey.

Determining the contents and methods of evaluation

"The special rules on customers' rating score" is the fundamental basis for the W platform to comprehensively evaluate drivers' work performance and contribution. Its purpose is to guide drivers to comply with the regulations, drive safely, and meet passengers' travel needs. Customers' rating score consists of the travel score, service score, compliance score, and safety score, with a possible total of 310. The travel score consists of the basic travel score and peak-hour score. The basic travel score can be easily obtained if an online car-hailing driver takes more than 3 orders monthly. The peak-hour score is obtained based on the accumulated number of orders taken by a driver during peak hours, an important indicator that measures the attendance rate of drivers in rush hours. The service score is a standard that evaluates how drivers meet the service needs of passengers. It is calculated daily based on the effective passenger evaluation or complaint in the driver's most recent 500 orders. When the driver's point-deduction behaviors specified in the "detailed guidelines on service standards," such as deliberate detours, cancellation with full responsibility, raising prices or negotiating prices, and rejection midway, are complained about or negatively evaluated by passengers, the platform will deduct the driver's service score accordingly based on the rules and regulations. An additional score will be given based on the assessment of the degree of drivers' compliance. For instance, compliance scores will be obtained if drivers upload the OCDL and OCTRP to platform applications. The safety score is a deduction item. A driver's initial safety score is 150, and when a driver has any potential unsafe behaviors, such as driving with tiredness or sexual harassment during the service process, the platform will deduct his safety score according to the relevant regulations. Compliance, the attendance rate in rush hours,

the quality of service, and abiding by the enterprise rules are the main contents of the W platform's evaluation of the drivers. Meanwhile, drivers' work behaviors are guided and further standardized by customers' rating scores, since their rating score is closely linked to not only the rules for the platform to distribute and price orders but also how much benefit and interest will be obtained by the drivers.

Defining punishment rules

The enterprise rules discipline online car-hailing drivers mainly through defining behaviors to be punished and clarifying the corresponding punishment rules in detail. These rules provide a written basis for digital technology to judge and punish the violation behaviors of drivers.

Take *"the safety rules"* as an example. The punishment rules of the W platform cover categories such as personal safety, property safety, traffic safety, and sexual harassment. On this basis, the platform defines specific violations and punishments by listing out detailed articles, for example, that sexual harassment refers to both verbal harassment and behavioral harassment, with verbal harassment including harassing others with vulgar words or information and with obscene language or information. When the driver harasses others with obscene language or information, the platform will permanently terminate the driver's service as punishment.

Defining the lawful jurisdiction of leasing companies

Outsourcing the driver management function can reduce the operation cost of the W platform but simultaneously increase the transaction cost. The reason is that principal-agent relationships based on commercial cooperation can bring not only conflicts of interest between the two parties but also speculation and moral hazards caused by information asymmetry (Furubotn and Richter 2015: 130). Enterprise rules, training, and digital technology can solve such problems.

Supervising work to avoid speculation via cooperative agreement

In the bureaucratic system, candidates for managers are selected on the basis of their professional qualifications and enjoy a fixed salary after taking office (Weber 2019a: 401). The W platform selects DMP based on evaluating CP's professional qualifications, and the service fee paid by the platform is obtained according to its performance every month. Before cooperation, the leasing company may, for example, submit false registration materials, exaggerate managerial ability and strength, or "take money without doing work;" therefore, it is a way for the W platform to investigate and sign agreements to avoid leasing companies' misconduct.

First, before signing agreements on the driver management service, the W platform sets a three-month inspection period for "DMP upgrading" and selects 10 out of the 24 CP companies to be promoted to DMP based on monthly performance. The indicators for performance evaluation include the hardware on site, number of service partners, driver retention rate, share of licensed drivers, driver activeness, and service score per capita. These indicators may not only measure the hardware facilities and driver management abilities among leasing companies but also avoid companies' speculation behaviors, such as submitting false registration materials or exaggerating managerial strength.

For example, the hardware on site includes whether there is a special training classroom that is more than 30 square meters in size, whether there is an office space that can provide consultation for drivers, and whether every 100 drivers are equipped with at least 1 service partner to provide consultation and management services.

Second, the W platform and the leasing companies promoted as DMPs signed a series of exclusive agreements, which include the "agreement on recruitment cooperation" and "agreement on consulting service." Similar to online car-hailing drivers, these agreements define legal relations and guide the work of leasing companies. The agreement stipulates the contents of cooperation between the two parties and the responsibilities of leasing companies, such as "providing drivers with consultation and training about the legal policy and platform system operated on the W platform, assisting drivers to complete platform registration and data supplement, providing vocational skill training for drivers, answering drivers' questions, and assisting the platform to complete other offline work on driver management." This clause not only defines the hierarchical relations among the service manager (platform), service partner (leasing company), and the online car-hailing driver but also provides a reasonable basis for the service manager to assign work tasks to the leasing company or to supervise their work. In addition, the agreement stipulates the rights and obligations of leasing companies and the liabilities for breaches of contract, such as "prohibiting the leasing company from cooperating with other competitive platforms, and terminating the cooperative relationship once being found."

Finally, the W platform also uses deposits to force leasing companies to comply with contracts and avoid moral hazard issues. According to "the contract of consultant services," both parties agree that the M company needs to pay a deposit of 50,000 yuan to the W platform, which stipulates that "when the leasing company violates the agreement or the platform rules, or when the service fee is not enough to deduct the liquidated damages or the compensations, the platform has the right to deduct it from the deposit."

Evaluating the behavior of leasing companies through platform rules to solve interest incompatibility

The main idea of performance evaluation and reward and punishment rules is to guide the leasing company to perform the driver management function according to the platform's requirements through a KPI evaluation, reward and punishment of the working process, and results of the leasing company. *The Evaluation Rules for Leasing Companies* formulated by the W platform divide the performance evaluation into a DMP access evaluation and a key indicator evaluation. A "DMP access evaluation" is a comprehensive investigation of the working process and results of the leasing company. The conventional evaluation indicators include "organized achievement," "safety management," "training project," and "platform cooperation." Each indicator also includes three to four decomposition indicators, which are measured by the data of driver behavior and the task completion of the leasing company. For example, the decomposition indicators of "organized achievement" include the "per driver service score," "driver retention rate," and "rate of the qualified driver," which are measured by the service score of drivers at the leasing company, the proportion of drivers leaving the leasing company, and the proportion of drivers with double certificates. "Platform cooperation" is measured by the

number of completed tasks assigned by the service manager every day. Each task completed by the leasing company is photographed and sent back to the service manager with jurisdiction through "Dingding" software for statistics. In addition to the conventional indicators, the W platform modifies the temporary indicators on a monthly basis according to the production and operation tasks and notifies the leasing company via e-mail. For example, to urge drivers to install in-vehicle monitoring equipment, the W platform names the "rate of equipment installation" as a temporary index to evaluate the leasing company. The W platform designs a "key indicator evaluation" about driver attendance and service quality, which is a key investigation of the performance of leasing companies in driver management. It is mainly composed of indicators such as the "number of online drivers," "online hours during the peak times," and "the rate of the licensed driver service."

Combining reward and punishment rules with a performance evaluation is an important strategy for the W platform to encourage leasing companies to perform driver management functions, divided into reward and punishment for work results and behavior. The evaluation coefficient is the basis for the reward and punishment of the work results for the W platform. The coefficient relates to the above two sets of evaluation indicators to determine the amount of service fees the leasing company can obtain every month, which implies that leasing companies can obtain high income as long as they perform management functions according to the requirements of the W platform. Based on the evaluation coefficient, the W platform will reward the leasing companies with the top scoring in the three-monthly key indicators and terminates the cooperation with the leasing companies that fail to meet the DMP access evaluation for three consecutive months. In addition to the reward and punishment of results, the W platform also punishes violations according to *The Reward and Punishment Rules for Leasing Company Services*, such as a "failure to cooperate with the platform, charging driver management fees, and being complained about by drivers, damaging the interests of the platform and drivers, and divulging privacy." If the leasing company had conducted the above behaviors, the W platform imposes "penalties such as fines, deduction of performance points, warnings, and termination of cooperation." In the meantime, the W platform will constantly improve and supplements the above rules according to their successful or failed management experiences. For example, after several petitions of taxi drivers organized by leasing companies, the W platform adds that "the cooperation agreement shall be terminated if organized group events or violations happen in leasing companies" to *The Reward and Punishment Rules for Leasing Company Services*.

Improving management through training and digital technology

Weber suggests that managers in bureaucratic organizations need specialized knowledge; therefore, "professional training" is indispensable (Weber 2019a: 399). The W platform provides two types of training to improve the managerial ability of leasing companies. One is designed for the chief management of leasing companies whose content includes the W platform's corporate culture and business management concept, the latest policies, rules and regulations, and enterprise operation and management knowledge. The other type of training is designed for the staff of the leasing company. The training content includes the enterprise rules of the platform, software system operation,

emotion management, and communication skills. However, regardless of the type of training, the W platform holds tests at the end of the training to ensure that the personnel of the leasing company have mastered the training content.

Implementing enterprise rules through digital technology and leasing companies

"Ruling a considerable number of people usually requires a team, which is a specific group that can be entrusted with the implementation of overall policies and specific orders" (Weber 2019a, b: 392). In the bureaucratic control system of the W platform, digital technology, leasing companies, and passengers (Gandini 2019) form an "administrative team" to jointly implement enterprise rules.

Implementing enterprise rules through digital technology

The major difference between the bureaucratic control of platforms and that of traditional enterprises is that digital technology executes enterprise rules, which greatly reduces the possibility of managers' selective execution of rules. In the traditional bureaucratic system, although enterprise rules restrict the power of managers, there is room for operability since managers cannot monitor employee behavior in real-time when implementing rules, and they will selectively execute the rules according to their own preferences. This equips the rigid system with a flexible aspect and generates the possibility of rent-seeking. The implementation of enterprise rules by digital technology can effectively avoid these problems. Taking fatigued driving as an example, the *safety rules* stipulate that "fatigued driving refers to the imbalance of physiological and psychological functions and the decline of driving skills when driving continuously for a long time"; "if the driver is found to have dangerous driving behavior such as fatigued driving, 150 safety bonus points will be deducted, and the platform will require him to participate in offline training many times." Fatigued driving behavior is monitored, judged, and punished in real time by digital technology. First, the drivers' facial expressions and movement data during driving are collected in real time by the monitoring equipment in the vehicle. Second, artificial intelligence filters the collected behavioral data to identify whether drivers have fatigued driving characteristics such as yawning, continuous blinking, long-term eye closure, and nodding. Finally, artificial intelligence compares the filtered data with the driver's driving track collected by digital sensors to comprehensively determine whether the driver has fatigued driving behavior. When the digital technology determines the driver's fatigue, the platform warns the driver through the vehicle monitoring equipment, deducts his safety bonus according to the rules, and notifies the leasing company for safety education and training. Moreover, the W platform publicizes the driver's name, mobile phone number, city, and punishment level on the "violation bulletin board" in the driver's app to reaffirm the platform rules.

Implementing enterprise rules through the leasing company

Although implementing enterprise rules through digital technology can solve the problem of system distortion in traditional bureaucratic control, it furthers the dehumanization of the dehumanized system, and some drivers quit the platform because the platform has no humanity. The W platform falls into the dilemma between labor order and driver stability. The premise of the platform labor order is that the enterprise rules

have been learned by the workers and implemented in action. However, the fact is that the education level of online car-hailing drivers is generally low (Zhao and Deng 2021), and even though the W platform can train drivers on rules through technical means, it cannot ensure that drivers can understand and master them accurately. Therefore, digital technology cannot solve the problem of how enterprise rules can be effectively digested and absorbed by workers, and it cannot solve the problems of driver recruitment and negative emotion relief. Digital technology can only undertake standard and rigid management functions such as task allocation, supervision, and reward and punishment. In contrast, nonstandard and flexible management functions such as driver recruitment, guiding work content, training, consultation, and psychological counseling still must be completed by people. Digital technology cannot eradicate the hierarchical relationship among people.

Neoclassical economics and transaction cost theory point out that production costs and transaction costs are the decisive factors for enterprises to choose whether to be completed by enterprises or by the market when organizing production. When the transaction costs from market are less than from enterprises, enterprises will complete the transaction through purchase (Zhou 2003: 30–40). According to China's labor laws and policies, the W platform chooses to hand over the nonstandard driver management functions that cannot be completed by digital technology to the leasing company through the market, which can reduce the labor costs and transaction costs in the process of driver recruitment and management, such as search cost and coordination costs. It can also block the legal risks and labor costs identified in the employment relationship due to the direct management of drivers (Zhao and Deng 2021). This is similar to the labor dispatch and labor outsourcing of traditional enterprises. The difference is that the W platform also manages the working process of the leasing company. The support of digital technology for management and the monopoly of the W platform on information, data, and market share are the fundamental reasons why the platform can control the contractor's work process across the enterprise boundary.

In summary, the W platform embeds the control system into organizational and social relationships and presents it through enterprise rules. Digital technology and leasing companies jointly implement enterprise rules to maintain the labor order of the platform.

The leasing company: managers in a bureaucratic control system

Leasing companies are a useful supplement to digital technology. They also play the managerial role in the W platform's bureaucratic control system and undertake driver management functions such as recruitment, training, and emotional counseling. The right of reward and punishment is a prerequisite for capitalists to ensure workers' cooperation and obedience (Edwards 1979: 18). In this regard, the W platform is different from the takeout platform (Li and Jiang 2020; Lei 2021). First, there is no employment relationship between the leasing companies and the online car-hailing drivers who obtained vehicle registration and service consultation from the leasing companies; therefore, the leasing companies cannot control the driver as an employer. Second, the W platform does not give the right of order allocation to the leasing companies; accordingly, the leasing companies do not have the authority to force the driver to obey the

management or to have a good relationship with management through emotional communication. A leasing company without the right of reward and punishment is similar to a manager who has lost real power and can only search for another way to enhance his managerial authority from the aspects of professional knowledge and value-added services.

Recruitment: attracting drivers to join

The W platform realizes the accurate cutting of effective labor and other labor through digital technology. To meet consumers' demand for instant services, the W platform needs to generate and maintain a stable labor reservoir so that effective labor can be purchased anytime. Recruitment is the water pump of the reservoir, which can continuously absorb fresh water droplets from the labor market for the W platform. Therefore, recruiting drivers has always been the top priority of all leasing companies. During the market expansion period of the W platform, leasing companies helped the platform quickly organize labor by importing driver data. In the stable period of the W platform, they attracted drivers to join through value-added services and licensed vehicles.

Importing driver data

> *"W platform chose to cooperate with us when entering T City, first, because our company has cooperated with other platforms before and we have data of more than 3,000 drivers; second, as a local enterprise, we have quite a lot of social resources to help them quickly obtain driver data; third, we have office space and manpower to help them recruit drivers offline" (20,200,321, chief manager of YBL leasing company).*

At the initial stage when the W platform entered T City, leasing companies were an important force to help the platform promote the offline market. At this time, there was only one condition for the W platform to cooperate with leasing companies; the leasing companies should have a certain amount of driver information inventory so that the W platform can quickly share ready-made driver resources. Certainly, having driver data is not enough; the W platform also needs to activate these drivers. The W platforms encouraged leasing companies to recruit and activate drivers by paying high commissions. The commission is determined by the total daily flow of drivers recruited by the leasing company, and the maximum proportion can reach 20%. To activate the existing drivers, leasing companies issue prizes and cash awards, send gas cards, and provide vehicle maintenance services to make the drivers work.

Attracting drivers to the W platform

Compared with importing the original data of drivers, it is more difficult to register new drivers with the W platform. Therefore, the leasing companies not only recruit drivers through general methods such as outdoor promotion, media advertising, and online job platforms but also recruit drivers through WeChat and the QQ of company employees, online car-hailing drivers, and their relatives and friends. To mobilize the enthusiasm

for recruiting online car-hailing drivers, the leasing companies also adopt a cash award policy.

> *We use cash to encourage drivers to pull more people to join our company. The activity at that time was to recommend new people to register as online taxi drivers and complete 20 orders. The driver and the recommender would get 200 yuan, respectively. The effect of the activity was very good. More than 4,000 new drivers registered in just one month, including many drivers from other platforms. To a large extent, many drivers of the W platform were stolen from other platforms when we worked offline" (20,200,424, the chief manager of JC leasing company).*

In addition to attracting drivers through incentives, leasing companies also recruit drivers through value-added services and licensed vehicles. When the W platform entered T City, the customer service and customer experience functions were not perfect. Therefore, providing offline value-added services for online car-hailing drivers has become an important strategy for leasing companies to attract drivers. Value-added services include software operations and methods to adjudicate complaints and driver-passenger disputes for drivers. Of course, the most exciting service for drivers is that the leasing companies can solve the problems of the redemption of vehicles from the local government and applying for reimbursement of administrative fines from the W platform for drivers who are subject to an administrative penalty. Although the online car-hailing platform existed under the banner of the sharing economy during the market expansion period, it disturbed the traditional taxi market to a great extent. Before the introduction of the online car-hailing policy, the municipal government of T City imposed administrative penalties in the form of fines and the seizure of online car-hailing vehicles on the grounds of illegal operation to protect the taxi industry. Although the W platform would fully reimburse for fines to stabilize the drivers' supply, it could not solve problems such as redeeming the car back. The leasing companies could calm drivers' emotions in time and communicate with the traffic management department to return the detained vehicles and handle the drivers' fine reimbursement.

After the local government issued the online car-hailing regulation, selling licensed vehicles has become the primary means for leasing companies to recruit drivers and earn profits (Zhao and Deng 2021). Qualified cars with the OCTRP have become scarce goods for a time and have become a useful weapon for leasing companies to attract drivers.

> *When the policy first came out, everyone was saying that the government wanted to limit it (the number of cars), so those who had licensed vehicles did not worry about recruiting drivers. The 4S store was out of stock for several models that sold well at that time. I directly pulled back more than 20 cars from the manufacturer through personal relationships and sold them out in less than a month" (20,200,321, the general manager of YBL leasing company).*

Training: teaching drivers how to work online

The W platform requires leasing companies to provide training and consulting services for online car-hailing drivers. On the one hand, there is a digital gap between the

complex functions of the W platform's digital technology and taxi drivers with low education. On the other hand, online car-hailing drivers not only need to understand traffic safety laws and regulations and online car-hailing laws and policies but also need to understand the platform rules, road conditions, and communication skills with passengers. In interviews, the author found that there are differences in the service score, order receiving volume, and income among drivers with the same working hours. The ability to work is the main reason for this phenomenon, and having related knowledge and skills is the key to the ability to work. Therefore, leasing companies teach drivers professional knowledge and skills, carry out safety production education, guide drivers to learn, and improve their professional skills and service efficiency.

Professional knowledge and skills

The training of professional knowledge and skills is the platform's requirement and is in line with the interests of the leasing companies since the training can indirectly increase the service fee and enable the leasing companies to obtain the authority to manage the driver. However, to avoid being recognized as an employment relationship, the leasing companies sign the consulting service agreement provided by the W platform with online car-hailing drivers. The agreement stipulates that it is a civil relationship between the company and drivers and that the leasing companies should provide consulting services for drivers in terms of online car-hailing laws and policies, traffic safety laws and regulations, enterprise rules, and software operation. The agreement also requires the leasing companies to "organize regular group activity at least once a month, integrate the drivers with the leasing companies and the driver with the W platform," and accept the driver's supervision and complaints." Online car-hailing drivers must agree to the leasing companies using its business data to manage them and to "regularly participate in the safety training or business training organized by the leasing companies."

There are various forms of training for car-hailing drivers, such as one-on-one guidance for software operation, new driver training meetings, and experience sharing. To improve the training quality, some leasing companies' managers or service partners will study the order sending software, platform rules, order receiving skills, and communication methods with customers and share their learning with their online car-hailing drivers.

Safety production education

The W platform requires the leasing companies to organize offline safety production education and training every quarter. The time and content of the training shall be determined by the W platform, but the leasing companies are responsible for notifying drivers to attend and organizing the drivers to sign in, maintaining the order of the venue, and explaining the training content. The training focuses on safe driving, including road safety laws, regulations, and safe driving rules. In addition to safety training, the W platform requires the leasing companies to carry out "return to the furnace" training and one-to-one safety education for drivers with violations.

Last month, the company fined [a driver]150 yuan for speeding and recalled the

driver to the company for safety education. First, [the company] let him see [in] the driver management system that the company was fined for speeding, then, [it] calmly analyzed the causes and hazards of speeding with him, and then told him the precautions and scoring skills" (20,200,822, head of M company).

To strengthen safety education, leasing companies will also publicize safety knowledge online and strive to eliminate potential safety hazards. First, safety knowledge such as road traffic rules, platform safety rules, and safety inspections are conveyed to drivers through WeChat groups, the driver's app, and SMS. For example, during the epidemic, the leasing companies reminded drivers through WeChat groups to measure their body temperature before driving, wear masks, and install protective isolation films. Second, the companies find potential safety hazards in time through WeChat groups and remind drivers to avoid risks. If the secretary and service partner heard a driver saying he was sleepy in the driver group, they would immediately remind the driver to go home and rest.

Psychological counseling: retain the driver

As atomized individuals, online car-hailing drivers were originally controlled by non-humanized algorithms. Humans are prone to the negative emotions of loneliness, depression, and even anger when they have disputes with customers or are punished by algorithms for no reason. Therefore, the W platform needs the leasing companies to conduct psychological counseling to reduce drivers' turnover rate. The M company has worked on two aspects: building a driver team and relieving negative emotions, which not only improves the work enthusiasm of drivers but also reduces their dissatisfaction to maintain an outlet for the reservoir of the labor force.

Team building: improving work enthusiasm

Team building is one of the task indicators that the platform requires the leasing companies to complete. When establishing the team, the M company divides the drivers into three categories—good, medium, and poor—according to the working frequency, service score, and turnover in business and selects a certain number of drivers from each of these three categories to form a team with a leader. The team leader is generally nominated by the M company and appointed after being assessed as excellent by the platform. The role of the team leader is to assist the M company in managing car-hailing drivers, provide business consultation and psychological counseling for the drivers, urge the team members to go online to receive orders, and report the difficulties raised by drivers to the leasing company. Similarly, the W platform also formulated a set of performance evaluations for the team leader and carried out rewards and punishments according to the team leader's work performance. In this way, the W platform forms a managerial structure of service manager (the W platform)—service partner (the M company)—team leader—team member within the online car-hailing driver team.

The W platform and the M company hold competitions or internal team rallies among online car-hailing driver teams in T city on holidays, rainy and snowy days, or other peak periods of vehicle demand and offer cash rewards to the winning drivers. These activities stimulate the drivers' team spirit and competitive consciousness and mobilize

the drivers' work enthusiasm. In addition, the M company divides drivers into grades according to their service score, online hours, and income data when forming a team. The drivers can find the business data of other team members in the driver app at any time. This not only enhances the awareness of competition among drivers and stimulates their work enthusiasm but also emphasizes the individual differences among drivers to divide the homogeneous driver group.

Emotion management: relieving negative emotions

The leasing companies have adopted four strategies for relieving drivers' work pressure and negative emotions. First, a WeChat group was organized. The driver WeChat group strengthens the emotional connection among team members at work, and drivers can vent their dissatisfaction at any time in the group. When they tell one another tragic experiences and comfort one another in the group, their negative emotions are vented to a certain extent. Second, offline emotional counseling services are provided. The chief of the M company claims that "the most important function of leasing companies is to provide emotional counseling to drivers. When they are tired, bored, or depressed, they come to the company to have a cup of tea and chat with me. After releasing emotions, I would give positive guidance in the spirit or give them free car wash tickets, and they will happily continue to drive." The third strategy is to relieve the negative emotions of drivers. When an event causes drivers' resistance, the leasing companies first observe the trend of public opinion in the WeChat group and find the problem in time. Then, it finds the aggrieved drivers and asks them to talk offline. Finally, the leasing companies listen to the drivers' demands and relieve their negative emotions. Fourth, when a driver encounters an accident or driver-passenger dispute, the leasing companies assist the driver in addressing the problem and alleviating the driver's anxiety.

In summary, the W platform has approached the problems of labor organization, training, and psychological counseling, which are hardly solved by digital technology, through its cooperation with leasing companies and has formed a hierarchical managerial structure comprised of platform enterprises (digital technology), leasing companies, team leaders, and online car-hailing drivers. However, this vertical bureaucratic structure at the market end is obscured by digital technology, which forms a mirage of a flat organizational structure.

Discussion and conclusion

The school of transaction cost theory represented by Ronald Coase and Oliver E. Williamson indicates that the significance of bureaucratic organization lies in resolving the speculation caused by information asymmetry (Zhou 2003: 38). However, does the emergence of platform enterprises that integrate market resources and conduct collaborative production through digital technology indicate that digital technology can eliminate bureaucracy? Taking the W platform of car-hailing in T City as an example, it is found through a field investigation that the W platform has built a hierarchical bureaucratic control system out of the platform enterprise that comprises leasing companies (with digital technology), team leaders, and drivers. First, to reduce costs, the W platform sets up posts of "online car-hailing drivers" and "business partners in service of

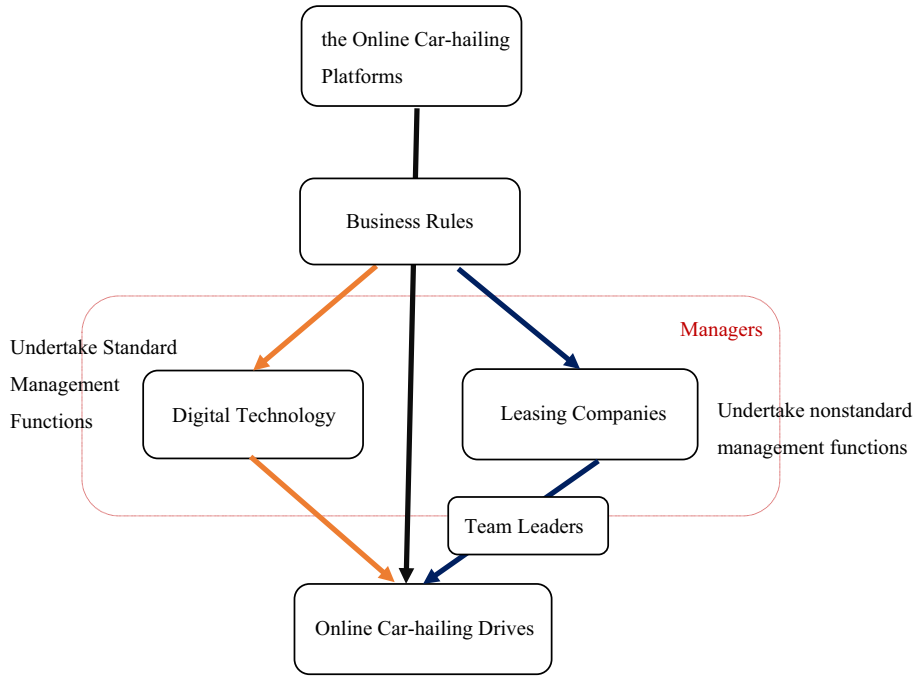

Fig. 1 The relationship among the platforms, business rules, digital technology, leasing companies and drivers

drivers" outside the enterprise, which are outsourced to the drivers and the leasing companies in the name of cooperation. Second, the W platform guides, evaluates, rewards, and punishes drivers and leasing companies through enterprise rules to ensure that their behaviors are consistent with the interests of the platform. As partners, the difference between the drivers and the leasing companies is that the drivers' labor process is constrained by the platform enterprise and the leasing companies' arrangement. Third, both digital technology and leasing companies are the executors of enterprise rules, while the leasing companies are responsible for completing the nonstandard driver management function that is difficult to realize through digital technology. Finally, under the platform control, the leasing companies organize drivers and improve their work efficiency and sense of belonging from the three aspects of recruitment, training, and emotion management (Fig. 1). Digital technology cannot eliminate the bureaucratic system. The W platform is not a flat market organization that manages car-hailing drivers through digital technology but rather a market-oriented bureaucratic organization that controls drivers through enterprise rules, digital technology, and leasing companies.

Unlike traditional bureaucratic organizations, the W platform moves the bureaucratic control system from the inside of the enterprise to the outside and implements the enterprise rules through digital technology and third-party institutions. Enterprise rules authorize digital technology and leasing companies to manage drivers. In turn, digital technology improves the efficiency and accuracy of the implementation of enterprise rules and reduces the possibility of the selective implementation of rules by managers; the leasing companies respond to criticism of the dehumanization of digital technology and help the platform solve the problems of organizing drivers, training drivers, and preventing the collective resistance of drivers. Accordingly, this research reveals that behind

the flat organizational structure of the online car-hailing platform is the bureaucratic and vertical control logic of the market end.

The theoretical contribution of this research is to expand the research perspective of labor process theory from micro-production to the market, to address how the power relationship between market participants affects the labor process of workers, and to emphasize the important role of third-party institutions in platform labor control. The existence of third-party organizations and their role in platform labor control are not limited to the online car-hailing platforms but generally exist in takeout, housekeeping services, and live streaming platforms. The motivation of platform enterprises to cooperate with third-party institutions is to quickly organize labor, reduce labor costs, and avoid the legal risk of recognized employment relationships due to the direct management of drivers. The disadvantage of organizing production through market transactions lies in transaction costs such as searches, investigations, and negotiations (Furubotn and Richter 2015: 47). The hierarchical control of online car-hailing platforms across the enterprise boundary can not only reduce the labor costs and risks of enterprises but also solve the transaction cost problem caused by information asymmetry in the market.

The school of new institutionalism suggests that the enterprise, market, and state are the three basic organizations. Of course, there are also special mixtures of market and bureaucracy such as franchising, leasing, and agencies (Furubotn and Richter 2015: 192,122). The work-on-demand model represented by Uber resets the boundary between the market and enterprises (De Stefano 2016), which is defined as "hierarchical outsourcing" (Muehlberger 2015). Although these studies address the nature of the platform from the perspective of the dominant relationship between it and workers, they neglect the worker management by third-party organizations and fail to see the control of the platform over the third-party, which shows that platform enterprises are also a mixture of market and bureaucracy. Compared with other mixed forms, platform enterprises not only prevent the opportunistic behavior of market participants through contracts but also evaluate, reward, and punish partners' work through enterprise rules, digital technology, and the guidance of third-party institutions. Therefore, market-oriented bureaucratic organizations have more rigorous control over market participants and are inclined to follow the control mode in bureaucratic organizations.

Power is the possibility of imposing one's will on the actions of others (Weber 2019b:1305). In traditional bureaucratic organizations, power derives from enterprise rules. Employers have the power to make rules, which, in turn, solidify the dominant power. Where does the power of market-oriented bureaucratic organizations to formulate enterprise rules come from? Weber put forward two opposite types of power domination, specifically, "domination by the interest pattern (especially by monopoly position)" and "domination by authority—command power and obedience obligation" (Weber 2019b: 1305). However, in the era of the platform economy, data, which is the key production factor, are monopolized by platform enterprises, so platform enterprises have the opportunity to establish a rational bureaucratic control system outside the enterprise through monopoly control and to authorize digital technology and third-party institutions to manage workers. Therefore, platform enterprises help the two types of power domination transform from opposition to integration. Visible market

transaction behavior masks the invisible bureaucratic control of platform enterprises over market participants via the monopoly of information and data.

Abbreviations

OCDL	Online car-hailing driver's license
OCTRP	Online car-hailing transportation registration permits
CP	Car manage-service partner
DMP	Driver manage-service partner
KPI	Key performance indicator

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ZL designed the study and conducted research, HY contributed in arranging and analyzing data. All authors read and approved the final manuscript.

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Declarations

Competing interests
The authors declare they have no competing interests.

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