Platform capitalism: genesis and De-Westernizing approach

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The paper focuses on the meaning, nature, and function of algorithmic management in lean platforms. These questions will be approached from two different but related perspectives. The first one, relates to the genesis of this capitalist organisation of production of goods and services, presenting different interpretations in international literature, and focusing on a specific theory of the emergence of the model called platform capitalism. The second one concerns the concept of De-Westernizing Platform Studies, aiming to understand the hegemonic functions of the platform model in a multipolar world. The analysis of platforms in China – including the role of algorithmic management in this country, the characteristics of the labour force employed and the quality of work – will be used as a framework in this approach.

L'articolo si concentra sul significato, la natura e la funzione della gestione algoritmica nelle lean platforms. Questi aspetti vengono affrontati da due prospettive diverse, sebbene correlate. La prima riguarda la genesi di questa organizzazione capitalistica della produzione di beni e servizi, presentando diverse interpretazioni nella letteratura internazionale e concentrandosi su una specifica teoria dell'emergere del modello chiamato capitalismo delle piattaforme. La seconda prospettiva riguarda il concetto di De-Westernizing Platform Studies, con l'obiettivo di comprendere le funzioni egemoniche del modello di piattaforma in un mondo multipolare. L'analisi delle piattaforme in Cina – che include il ruolo della gestione algoritmica in questo Paese, le caratteristiche della forza lavoro impiegata e la qualità del lavoro – è utilizzata come quadro di riferimento per questo approccio.

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1. Genesis and features of lean digital platforms

From the early 2000s, during the second digital revolution, the affirmation of the digital organisation of production began to reinforce the process of outsourcing and the contingency of the patterns of capitalist business. In these years, there has been a radicalisation of digital technologies and lean principles more strongly interconnected. This is usually called digital lean production, which can be a powerful combination of timeless lean principles and evolving digital technologies to reduce waste and irregularity in production processes (Garibaldo and Rinaldini 2022; Womack *et al.* 2007). Subcontracting, value chains and the coordination of subordinate companies are different management strategies aimed at breaking up the workplace (Weil 2017). These trends are reshaping the division of labour and production between what must be

done within the boundaries of the firm and what can be outsourced. Any activities that are not core to the company's profitability can be outsourced. Thus, while the first phase of mechanisation saw the peak of industrial automation and the creation of industrial conglomerates and factories that concentrated large numbers of workers, the post-Fordist model in the developed world has been creating a profound change, giving companies a new perspective free from geographical constraints (Frey, Osborne 2015; De Stefano 2016). With the evolution of algorithmic technologies, an economy of shared goods and services has emerged, allowing the extraction of value from information, knowledge, and human intellectual activity, first within traditional companies (Alquati 1975; Accornero 2001) and later in virtual social spaces with big data mining (Srnicek 2017). Embedded in this scenario is the source of the business model called the digitalised platform. But what defines a digitalised platform? What actions drive the creation and extraction of value from virtual space control and appropriation? The term platform is indeed ubiquitous, but for some scholars, it is unclear whether it is a mere reference or a tangible organisation, a new condition in the digital age for shaping the production of means and services, or a semantic guise for the natural evolution of the trajectory of capitalism. Against this background, the rise of digital platforms has received a great deal of scholarly attention. However, much of this focus has tended to model Western platforms such as Glovo, Deliveroo, Uber, AMT, etc. This article seeks to contribute to the project of de-Westernising and 're-regionalising' Internet studies by analysing the model of Chinese platforms. Western platforms have recently come under pressure due to the rapid development and growing presence of online platforms based in China, India, Brazil, etc. (Davis and Xiao 2021). Academic interest in Chinese platforms and their users, and in the specific cultural, regulatory, and commercial settings in which such platforms develop, has grown rapidly, especially in the last few years (Wang and Lobato 2019; Zhang and Zhang 2018). Our aim is to contribute to this body of literature by analysing Chinese platforms. In doing so, we aim to avoid methodological nationalism, which naturalises the organisation of the world into nation-States. In the first case, our focus on Chinese platforms is not intended to consolidate the nation-state as a pre-determined category by uncritically mapping differences between platforms onto the category of the nation-state (de Kloet *et al.* 2019), but rather to identify locally specific historical, cultural, and technological characteristics. The article is organised as follows: it begins with a literature review focusing on the genesis of the work platform economy. Following the identification of different cognitive approaches to the origin of this phenomenon, an analysis of work platforms will be carried out using an approach defined in the literature as De-Westernising studies. Subsequently, the article delves into analysing how these platforms function within a specific non-Western context, specifically China, by analysing the process of production and work organisation facilitated by algorithmic management. Finally, some preliminary conclusions will be drawn.

Over the past decade, there has been a growing body of research to understand the work processes of algorithmic management, including control technologies (Shapiro 2018; Veen *et al.* 2019; Wood *et al.* 2019) and the implications of precarious work and workers' algorithmic resistance (Tassinari and Maccarrone 2020). However, platform work processes cannot be fully studied without a scientific analysis of the managerial processes designed to organise work. As Vallas and Schor (2020) argue, it is essential to clarify the algorithmic design process and whether platforms represent a dissimilar type of capitalist organisation and a governance mechanism or an organisational and management process in close continuity with some past industrial production. Indeed, in the context of the proliferation of new concepts of periodisation, it is necessary to pay some attention to longer histories. Before we latch onto new organisational models or paradigms, such as that of cognitive or immaterial capitalism (Boutang 2011; Chun 2016; Du Gay 2003), it is best to pay attention to their obscured lineages, lest the revealing continuities be obscured in our rush to the new. In this sense, Steinberg's 2022 theory is very interesting. For this scholar, platform capitalism should be seen as a direct extension not only of post-Fordism or post-industrial culture, but of a specific approach of production in this framework, the Toyota automobile production model. From this perspective, platform capitalism (Srnicek 2017) is an

evolutionary managerial continuity of post-Fordism, rather than a break from Taylorist principles, born out of the media and cognitive production insights, for example, in Silicon Valley from the 1990s. Just as for scholars such as Vismann (2008), a history of files contains a prehistory of the computer, for Steinberg, who completes the Srnicek theory and makes it more specific, the history of Toyota's production contains a forgotten prehistory of platform capitalism. This becomes even clearer when we observe how everything, from business organization (e.g. lean organization) to software programming (e.g. lean) to start-up philosophies (e.g. lean start-up, Ries, (Frederiksen and Brem 2017) revolves around the mantra of lean start-ups (Cusumano 1991). Thus, according to some scholars, recent writings in organization studies that assume the demise of firms due to the rise of digital platform should be considered with some caution. Platforms are not so much technological objects that lead to the demise of firms as they are managerial objects that enable firms to offer and distribute products and services by other means. Steinberg's theory thus traces gig economy back to a longer history of outsourcing and precarious work in the automotive sector, tracing its genesis to practices developed to regulate production in Toyota factories. This line is even more relevant today as the platforms themselves complete their cycle from car factories to smartphones to cars with Uber, Didi, Tesla, Waymo, and Apple and their experiments in autonomous driving and city mapping (Chen and Qiu 2019), not to mention the persistent rumours of technology companies entering the car manufacturing business. A case in point is the recent announcement that Foxconn, Apple's main supplier for smartphone manufacturing, is entering the electric vehicle business. As smartphone manufacturers move into electric vehicle production, location-based platforms use apps to network outsourced workers, just as Toyota used the Kanban system and then digital technology to network all the companies that outsource production parts. Apps represent a key point of production and play the role of manager, and their construction can also be outsourced to other IT companies outside the same platform. In this algorithmic management model, the drivers of the lean delivery platforms that deliver food work as virtual assembly line workers, following the procedure of algorithmic operations without human digital management. Thus, for scholars such as Steinberg, who resume the historical studies of authors like Cusumano, the platform economy follows the same model as Toyota lean production, with an innovative approach to the Kanban organisation of production (Bergvall-Kåreborn, Howcroft 2013).

In Toyota's history, just-in-time production was first achieved through the circulation of low-tech pieces of paper (kanban) before being integrated into networked computers. In Steinberg and Cusumano's theory, technologies are related to organisation, but, as Steinberg's analysis shows, not in a deterministic way. Technology does not simply organise; technology itself is organised by social institutions and organisational/managerial models (Conrad 2019; Touraine 2001). In this case, platforms such as media and technologies are informed by existing managerial practices. In response to Alaimo and Kallinikos' provocation that 'technology is organisation' (2021), Steinberg suggests that organisations are collections of practices that inform and resist the adoption of technologies. The name platform itself originated within the Japanese and U.S. lean automotive industry. In fact, the term referred to a material infrastructure for the construction of a car that could then be personalized according to customer preferences through a system of on-demand production and a complex method of collecting data from consumers, involving salespeople and distributors, who used the first computers and then outsourced parts of the production to companies with a precarious workforce (Womack *et al.* 2007). In a complex analysis of the platform concept from the automotive industry to cybernetic, computer and then digital platforms, Cusumano identified technology platforms as a common infrastructure or core technology that a company can reuse in different product variants, like an internal product platform (Jansen and Cusumano 2010, 32). This in turn requires "a strategy for opening up its technology to complementary suppliers and creating economic incentives (such as licensing fees or financial subsidies) for other companies or individual users to join the same ecosystem and adopt the platform technology as their own". Platforms in two models, digital economy and Toyota system, provide a set of shared technologies, tools, and interfaces to a large group of users who can build what they want on a

Table 1. Similarities between Toyota and platform production methods

Toyota automobile manufacturing (50s)	Platform capitalism (2000s)
Automotive industry built around the stack platform (started with Ford; further developed by GM and then Toyota).	Platform stack template for computers, algorithmic technology, or media sites.
Term platform used in connection with the base or frame as of the late 1970s.	Term platform used in relation to computers in the 1990s and social media sites and digital intermediaries as of the 2000s.
Automobile manufacturing based on the Toyotist plant as a hub or intermediary; most component production is outsourced.	The intermediary platform model is dominant in descriptions of platform capitalism.
Subsidiaries and procurement companies use the temporary or just-in-time work model.	The temporary or just-in-time work model dominates.
Toyota collects production and consumption data, adjusting production plans based on consumer data collected from sellers.	The platforms are data-intensive and data-dependent; they collect data to optimize production, search results, automate algorithmic management.
Production begins when an order is placed; Toyota increases or decreases production as needed; just-in-time is the model.	The production or provision of services begins when an order is placed; on-demand is the model.
Toyota outsources risk (and storage) to suppliers, expecting immediate delivery of components.	The platforms outsource risks to the workforce.

Source: Steinberg (2022), Srniceck (2017)

stable infrastructure. So, the platforms present two dimensions in this nature: they are at the same time an intermediation and an infrastructure. This double identity is possible to grasp through data mining. In this sense, there's a different understanding of this phenomenon from that of Steinberg and Srnicek. In fact, Srnicek tends to present the data-centricity and intermediary emphasis of the platform era as new phenomena. Whereas, as we have seen, authors such as Steinberg incorporate them precisely into the management model of Toyota's car production. The difference is that in platform capitalism, data mining is not a tool for improving and increasing the value of production, but the only goal of business. Thus, contrary to assumptions about the origin of the term in the computer industry, which often project it back decades (e.g. the IBM 360 was called a platform; Bresnahan and Greenstein 1999), we find the term platform first in the automobile industry, from where it spread to the information technology sector. Abandoning the Fordist logic of 'just-in-case' overproduction, Toyota's just-in-time production began to build the car after receiving the consumer's order, with data collected at several points in the production process[1]. Tight information circuits between car dealers, salesmen, factories, component manufacturers themselves and consumers created a highly adaptive and data-dependent production process (Cusumano 1985; Tsutsui 2001). In its hub-like coordination of multisided markets, Toyota's is a crucial organizational antecedent in the development of the digital platform economy model. Table 1 maps these correspondences.

2. De-Westernizing the studies of lean platforms

The rise of digital platforms in China, India, Brazil, etc. (Davis and Xiao 2021) has contributed to enriching the analytical framework of platform economy studies. Many developing countries,

1 In the Toyota system, data is central not only to the cognitive extraction of workers' skills and knowledge, but also to the preferences of the end consumer. For example, a network of salesmen who visited customers' homes to assess their needs reported their preferences and car orders to Toyota headquarters. Consumer orders for new cars mirrored the kanban cards, this time moving to the production plants. In Toyota's built-to-order system, the salesman became the first step in the kanban system, sending orders for pre-sold cars to the factory for delivery to specific customers in two to three weeks. Even when not selling a car, salesmen visited customers' homes in Japan, helping to collect data on the customer's marital status, car purchase history and preferences, ensuring that "distribution became a fully integrated part of the overall production system".

such as India, have attracted ICT investment. These investments have driven not only software exports, but also outsourcing and offshoring by ICT companies in advanced economies. China is a different case. In this country, platforms have played a central role in state modernisation projects and efforts to promote Chinese interests abroad and have made technological innovations that complicate the historical 'copycat' image of Chinese technology firms.

As Srnicek (2017) argues, US platform capitalism developed in response to a 'long downturn' in the economic fortunes of the West and an associated crisis of capital accumulation. In search of new markets, capitalism adapted to a digital surveillance model through the mechanism of the digital platform, which focused on the accumulation of value through the appropriation and commodification of user data. Chinese platforms, by contrast, have developed since the late 1990s (when Alibaba and Tencent were founded; Baidu followed in 2000) in the context of a long boom in China's economic fortunes, and have only relatively recently been identified as a possible antidote to flattening economic growth (Hong 2017). Like all platforms, China's are not hegemonic, but through their close association with the state, they play a multifaceted role as a remaking of the economy, in the government's strategy to ensure social stability, and as a vehicle for China's expansionist strategy. From a hegemonic point of view, the Western platform developed as a techno-libertarian response to the crisis of capital accumulation, while the Chinese platform, which combines the imperatives of business and government, developed as a techno-nationalist (Plantin and de Seta 2019) response to the perception that China has a low international status that it does not merit and that it should occupy a central place on the world stage. In this context, China's digital platforms play an explicit role in attempts to promote Chinese culture and state control and ideology internationally, which is fundamentally different from the role played by Western platforms. Chinese platform hegemony is not only outward-facing. Just as Western platforms project the hegemony of free markets, deregulation, disruption, and labour flexibility internationally and domestically, so Chinese platforms play a role in projecting and directly managing market and state power in the domestic context. Hence, while Western platforms have long used ranking systems (e.g., Uber's customer and driver ranking system), which are generally separate from the State, Chinese platforms, developed in cooperation with the State (Wong and Dobson 2019), gather an enormous amount of personal data. Chinese platforms are heavily implicated in the circuits of global capitalism and financialisation yet have become among China's largest and most dominant companies, central to national renewal and expansion projects (Hong 2017). What becomes clear, then, is that regional platform histories and logic are not interchangeable. As Goody (2010) argues, globalisation "is no longer exclusively Western". It is the task of scholars, then, to open and regionalise platform studies to address the question of what different historical, state, and cultural imperatives drive the platforms in their different cultural contexts, and from this to address the increasingly pressing question of what diverse hegemonic roles platforms play, now, in a multipolar world. Hence, China's platform giants are characterised by a symbiotic, albeit dynamically changing, relationship between monopolistic technology companies and the government. A distinct Chinese economic tradition of the market within the State is conceptualised (in opposition to the liberal capitalist conception of the market economy where the State is subject to the market). These different histories and features of Chinese platform capitalism also shape a different pattern of algorithmic management.

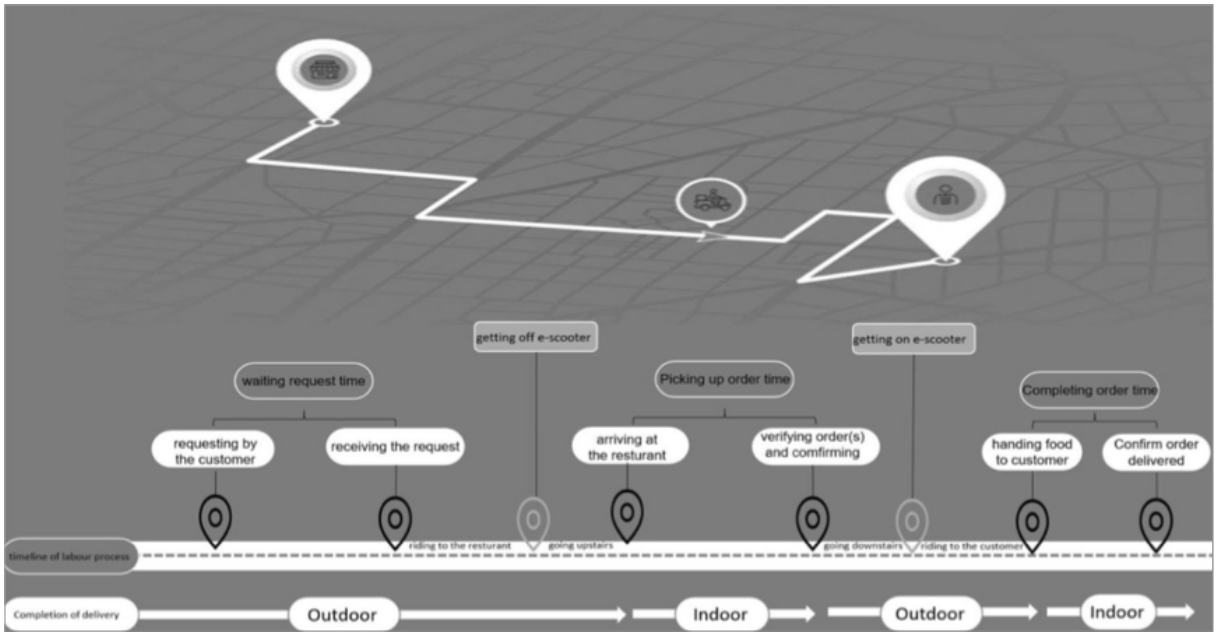
3. Algorithmic management and the workforce in the Chinese lean platforms

The Taylorist dynamic of production in lean-location delivery platforms is particularly developed in the context of Chinese delivery platforms. China has the largest online food delivery industry in the world. At the end of 2019, the market size was approximately $110 billion, with an average annual increase of 31% over the past half-decade (Zhou 2020). The growing food delivery market in China is dominated by two large platform-based startups, Meituan and Ele.me, which together accounted for more than 90% of the market in 2020, and are being acquired by China's duo tech titans Tencent and Alibaba, respectively. To date, Meituan has 3.98 million registered food delivery drivers and

Ele.me has 3.1 million (Huang 2023). The first evidence of the organisation of Chinese platforms is the extensive use of a vulnerable workforce. Most drivers are socially marginalised citizens from the poorest parts of Chinese society, such as rural areas. Similarly to platforms in the Western world that tend to use migrant labour as a marginal workforce (De Minicis and Lauande Rodrigues 2021), in China, this role is filled by farmers who arrive in various Chinese megacities (such as Beijing and Hong Kong). The food supply industry has thus become an alternative labour container for migrant workers displaced by the ongoing industrial transformation. Two key factors in China's political economy may affect the organisation of labour and the control mechanisms of the platform economy. First, China's hukou (household registration system) creates entrenched inequality and discrimination against rural migrant workers in labour markets (Xie 2022). Under this system, migrant workers are forced into a subordinate class with inferior political-economic status and are institutionally deprived of citizenship rights in urban areas; thus, they are dictated to serve as cheap labour for capital accumulation in the post-socialist transformation (Pun 2015). Second, in pursuit of economic growth, the Chinese State has historically engaged in a race to the bottom in labour wages to gain a competitive advantage in the global market (Zhang *et al.* 2019). In this sense, it is very important to consider the concept of informal or potential workforce (Mezzadra 2021) that the platforms use. Trade unions have been set up for window dressing and labour movements but are under strict surveillance and repression by the Chinese government. In the digital era, the Chinese government has prioritised economic growth over the welfare and rights of rural workers by providing a flexible regulatory environment for the development of the digital economy (Butollo and Luthji 2017). As such, the rise of algorithms to allocate and manage vulnerable workers has exacerbated labour intensification, fostering increased competition among poor workers and the effective devaluation of labour. This downward pressure on working conditions leads to fatigue and accidents, as long hours without breaks become the norm (Zhang 2021). Specifically, there are two types of riders on both Chinese platforms: shift riders and piece-rate drivers. The former are more likely to be full-time workers who work fixed shifts, while the latter (with free log-in) are more flexible workers who work on a piece-rate basis. Instead of establishing direct relationships with these drivers, the platforms pay to use the labour services of labour supply companies. This creates a triangular labour relationship between the rider, the labour agency, and the platform. Although the labour service of food delivery is outsourced, the labour supply companies have limited power to manage the food delivery workers. They are required to comply with the operational and management rules set by the platforms, which are built into the app for the entire food delivery production process. Riders are therefore de facto strictly controlled by the platforms. For example, there is a standard set of work uniforms and work equipment with the logos of the platforms, rather than the labour supply companies. In addition, work requirements, specifications and payment structures are regulated by the platforms. Most drivers are unclear about who has a legal employment relationship with them (Sun 2019). In this way, the Chinese platforms relieve the drivers of their responsibility and transfer all legal and economic risks to the labour supply companies and the food delivery drivers themselves. Another important characteristic of the Chinese platforms, in addition to the radicalisation of the Taylorist scientific organisation of work, is represented by the involvement of the government, in its various articulations, in the algorithmic management as one of the multiple stakeholders. Figure 1, thus, provides an overview of the entire process of organising work on delivery platforms in China. It represents, in a Taylorist process, the scientific organisation of the work process for a single task carried out by a Chinese rider, from the assignment of the task after logging in to the delivery of the meal to the end customer.

The figure illustrates the work process of a rider who is subject to a piecework payment system (free registration) or a shift-based payment system (registration). In both cases, the relationship between task performance and wage payment is different. In the first case, the payment corresponds to the time of picking up the order at the restaurant, while in the second case, it corresponds to the start of waiting for the order. In the case of piecework drivers, the time spent waiting for the food to be delivered is

Figure 1. Scientific managerial analysis and phased approach to executing a task on China's Lean Food Delivery Platforms

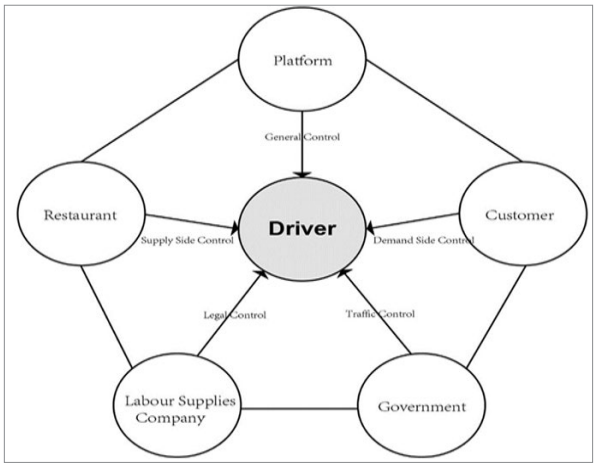


Source: Huang (2023)

not paid, whereas in the case of shift workers it is. In general, however, in both cases in China, every stage of the work process is strictly app-centric and based entirely on algorithmic management. The recruitment process for workers is carried out on an online form, which is mainly targeted at Chinese citizens from rural areas. Job seekers must first download a dedicated app, register, and then upload a scanned copy of their national ID card, residence certificate or, in major cities, residence permit. It is important to note that this process involves direct collaboration between the platform and the government, with control over the process entirely managed and secured by the platform. There is no application mediated by a public digital identity. Furthermore, in China, the platform is authorised to access the government's powerful citizen surveillance system based on demographic big data to determine whether the candidate is qualified for the job, especially in terms of criminal history and health. Thus, with the involvement of intermediary companies in algorithmic management, the management of algorithms by multiple stakeholders in China is extremely complex (Figure 2).

It's important to highlight that in China algorithmic management uses software, such as Google maps, to give directions, but the rider must strictly follow the algorithm's instructions regarding the route to be taken and the timing within various zones that make up the production process shown in Figure 1. The work organisation of the task consists of indoor and outdoor phases. Another feature of the lean platform in the Chinese context is that the algorithm communicates instructions on the route and speed to be followed via headphones, allowing the driver to navigate freely while following the

Figure 2. The algorithmic management scheme of the multiple stakeholders in the lean platforms in China



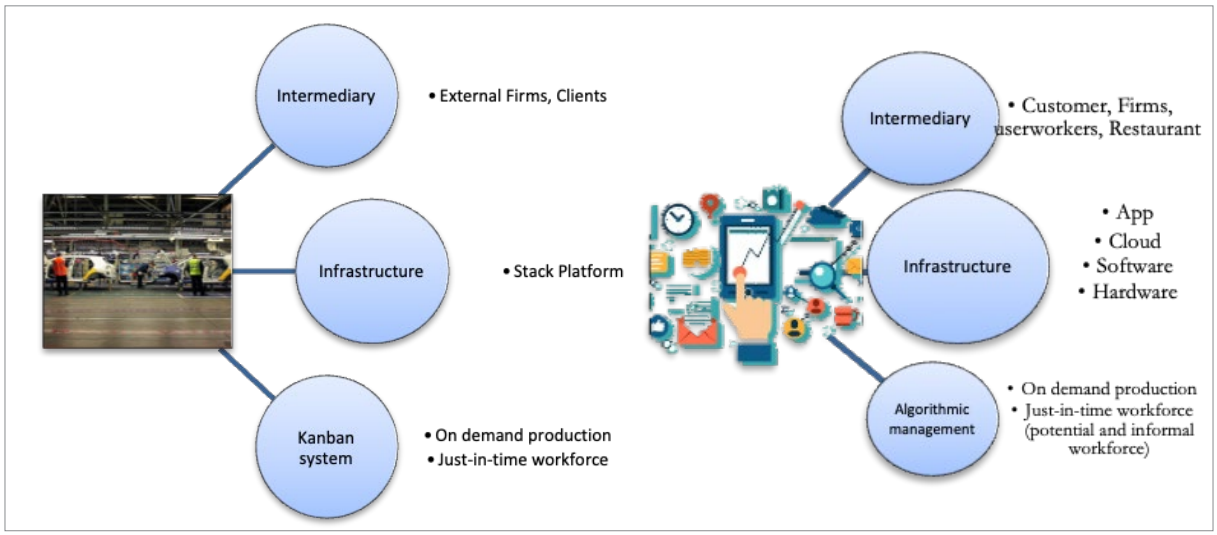
Source: Huang (2023)

instructions of the work process (speeding up the process, changing direction) or suddenly receiving several instructions in a single task. Before accessing work benefits, all Chinese delivery platforms require their drivers to complete an online professional training course through the app. The course consists of approximately 15 minutes of video material covering the standards and rules related to food delivery services. International analyses, including the Chinese case (De Minicis 2023), show that digital employment relationships and forced logouts of drivers based on game-based tactics are well-known. The opacity of sanctions and a daily subsistence wage can be seen as part of a broader phenomenon of employment deregulation in the platform economy (Crouch 2019). Furthermore, the weakness of trade unions in protecting the rights of digital workers in China coincides with a powerful platform surveillance system that hinders worker mobilisation and thus consolidates the strength of digital capitalism (Marrone 2021). Finally, a central aspect of platform capitalism in China is the use of algorithmic management and state control not only in organising work, but also in defining labour standardisation regimes. This is achieved through a complex and constant system of ranking and social communication with different stakeholders: firms, clients, and state municipal authorities on the performance of the drivers who enter its intermediation and control infrastructure. If we look at Figure 1, we can see several actions. Everything is scientifically organised into phases and each driver has a personal identification code. When drivers commit public offences, the local authority immediately transmits this data to the platforms, which then include these warnings into the rating and ranking system. In summary, tasks on Chinese platforms are highly standardised and controlled by algorithm management at every stage. Public authorities are also involved in the monitoring of work performance. That's why there is a radicalisation of the concept of Taylorist culture in a competition to develop a post-fordist production within a non-liberal scenario. Many workers on Chinese platforms describe their performance as being like puppets, completely controlled by algorithmic management without any form of decision-making autonomy (Huang 2023; Zhang and Yang 2024). Chinese platforms are also characterised by blind orders, where the driver does not know the delivery address in order to avoid refusing certain tasks.

Conclusions

In the article, we have addressed several issues related to new theoretical developments concerning the world of work platforms. Looking at different analytical perspectives in the literature, we have examined their genesis, characteristics, and nature. From an analytical standpoint, we have located this phenomenon of platform capitalism within contin-

Figure 3. Similarity platform economy - Toyota/Lean economy



Source: Authors'own elaboration

gent developments of capitalism and within a long history of relations between automation and capitalism. Srnicek's 2017 book takes up this hypothesis, complemented by Steinberg's analysis, which identifies this continuity within a radicalisation and development of the Toyota model (De Minicis 2019a). What is striking about such an analytical perspective is that it is not the technologies that define the organisational models of production, but rather the organisational forms that evolve according to the new technologies that they incorporate. It is in this sense that Figure 3 shows the correspondence between the two systems of production.

On the other hand, we have introduced a de-Westernising approach to the study of the lean platform. This business model is multipolar and networked and has developed simultaneously in all sectors of the global economy (Mezzadra 2021), so it's crucial to understand the characteristics this phenomenon adopts in different, Western or non-Western, capitalist contexts. It is necessary to examine how the use of management algorithms affects the characteristics of the workforce, the quality of work and production in such differentiated situations. Two concepts seem to stand out: the different roles of the State and the intensive use of an informal workforce with an extraordinary level of scalability. This dynamic characterises one of the main advantages of the platform economy, specifically the availability of a potential workforce that is hard to measure (Mezzadra 2023; De Minicis 2019b). A phenomenon that inevitably has a strong impact on the quality of work, both in terms of production pattern organisation and in terms of wages.

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