



Digital Platforms, Algorithmic Control and Working Conditions of Platform Workers: A Study of Delhi

Ravindra Kumar, Muzib Md. Moniruzzaman, Rita Rani Majhi, Waquar Yunus Khan,
Sivasankar V

Department of Economics, Pondicherry University, Puducherry, India
ravindran.kumar2013@gmail.com

Abstract. The emergence of the digital economy has transformed the structure of the traditional labor market and the main reason behind these are constant growth of temporary, contingent and platform work. The services provided by the digital platform is not only increasing in India, but throughout the world. These platforms operate as mediator for matching workers with customers while exercising significant control through algorithms, commissions, and incentive structures. The income of delivery boys and ride hailing workers is unstable, heavily dependent on incentives and demand, with little or no job security. A swift growth of platform work in our country has transformed the urban labor market, particularly in metropolitan cities Delhi. The present study examines the working conditions of platform workers and use exploratory factor analysis for better understanding. Through exploratory factor analysis four factors, namely algorithmic control, Economic dependence, Job satisfaction and work experience and perception has been identified.

Keywords: Gig economy; Informal labour; Inequality; Platform workers; Algorithmic control; India

1. Introduction

The exponential growth of digitalization of the economy along with invention of sophisticated applications and emergence of various platforms have changed the nature of work completely in last 10 years (Rani et al., 2022). The emergence of the digital economy has transformed the structure of the traditional labor market and the main reason behind these are constant growth of temporary, contingent and platform work (Oranburg, & Palagashvili, 2018, Lang et al., 2023). The trend in the gig economy shows a positive trend that it is continuing to grow (Dey, Ture, & Ravi, 2022). The standard

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employment model which was full time, permanent, fair wages, good working condition and future prospect growth now shifted to precarious, short-term, part time, informal work, self-employed and subcontracting across globe. (ILO, 2015; Mandl et al., 2015). As per the report of (ILO, 2015) around 75 percent of globally available jobs are affected by this new work employment relations. More than 50 percent of the jobs has been created in the Organization for Economic Co-operation and Development (OECD) since 1990s were non-standard in nature. (OECD, 2015: 15). There is no universally accepted definition of non-standard work arrangements. Non-standard employment is a kind of employment relationships which do not comply the norm such as full-time work, regular, employer and employee relationships over a long period of time. The gig economy, gig workers, platforms workers are fragment of the non-formal economy. There are three types of employment under this category such as (1) self employment (own-account workers); b) temporary or fixed-term contracts; and c) part-time work OECD (2015, P-138). A new type of economy came into discussion among scholars during 20 years and under these new types of on-demand work done. So, platform companies allot works to an independent contractor. This is known as the gig economy (De Stefano, 2016). Under this economy, workers are hired impermanently. Therefore, they are not entitled to receive minimum wages, fixed working hours, paid leave, sick pay and security (Woodcock and Graham, 2019).

Platform economy is defined as the emergence of exclusive economic phenomena of two-sided market in traditional market economics (Evans, 2003). With the expansion of digital platforms, platform-based work has increased significantly across the globe. It is Platform work which facilitate the company to hire temporary gig workers for any specific task in the need of hours until work is finished. On the one hand, it reduces the cost and risk of the company and on the other hand, increases precarity for gig workers. The example of gig workers is Uber driver, Lyft driver but there are many other workers who also come under gig work preview such as freelancer, contractor and highly skilled and highly paid workers. (Schor, 2020). The covid-19 have given a great push to delivery services due to lock-downs, social distancing rule and remote working a new way of work (Rani et al., 2022).

The rapid use of digital platforms at a vast scale has changed the way of doing work (Muldoon & Raekstad, 2023). The labor market is changed not only in India but also in overseas countries too. This has paved the way for a new kind of economy which is considered these days gig economy. This new type of economy contains the feature of work which are short-term, task-based, and platform-mediated. The rapid proliferation of

precarious employment is not only observed in developing countries but its presence is experienced in developed countries too (Friedman, 2014; Vallas & Schor, 2020). A large number of problems exists there which explain the precarity platform work. The main defining feature of platform-based work is income instability, algorithmic control, lack of social security, and undefined employment (Wood et al., 2019; Staab & Nachtwey, 2016). There is no doubt that the extensive use of advanced technologies have interfered in the current employment relations, but still it cannot be denied that platform-based work have many similarities with the traditional informal employment. In order to avoid legal obligation to provide some social security benefits to workers, the platform companies designate platform workers as independent contractors (Zwick, 2018; Mohapatra & Sahoo, 2023).

After thoroughly reading more than 52 research articles across Globe on the gig economy. The researchers found that there is dearth of quantitative analysis which address the issues of informality of platform workers. This study is a very small effort to fill to the existing research gap. So, this study tends to analyze the socio-economic condition of platform workers in Delhi and use exploratory factor analysis by using 16 Five-Likert scale questions.

This paper is split into six sections. Section 1 discusses on Introduction; it also covered the overview of the Gig Economy and workers engaged in this economy. Section 2 describes the thematic review of literature. Section 3 provides theoretical background. Section 4 is method section which describes, sampling feature, techniques and analysis methods section 5 contains result and discussions about the platform workers. Final section provides conclusion and policy suggestions.

2. Review of Literature

After reviewing more than 120 research papers published in reputed journals, including those indexed in SAGE, Elsevier, and other Scopus-indexed journals, Work Organisation, Labour & Globalization, Work, Employment and Society, Information, Communication & Society and Economic and Political Weekly, the researcher identified more than 25 studies directly related to problems faced by platform workers. The literature suggests that only a limited number of studies have examined the exploitation of platform workers from the perspective of unpaid waiting time, long working hours, and uneven working conditions. These issues may be understood through the framework of labour exploitation and capitalist labour processes proposed by Karl Marx (1976).

2.1 Growth of Platform Work and Gig Economy

As on-demand services such as ride-hailing and grocery delivery services have flourished across the world, researchers have examined these services from different perspectives (Krier, Dabanc, Aguiléra, & Louvet, 2022). Gig work is not new to the Indian economy and was earlier known by different terms such as temporary work and casual work. However, the emergence of digital labour platforms has transformed employment patterns by increasing flexibility and remote work opportunities, particularly for highly skilled gig workers (Gaur & Sharma, 2023). The gig platform offers an opportunity to reach labour market participants who are often excluded from formal employment opportunities (Dey, Ture, & Ravi, 2022). At the same time, the majority of gig workers, especially delivery riders and drivers, do not join platform work entirely out of choice but because of a lack of better opportunities in the formal sector (Shetty, 2022). The digital platform is not just a digital technology rather it is a economic organization functioning like some other business models. In spite of having lean and technological based nature, they organize and control labor for profit motive (Carelli et al., 2021).

2.2 Flexible Employment and Labour Precarity

The main feature of zero-hours contracts is that employees are not entitled to receive any guaranteed work or pay, while employers enjoy complete discretion over the hours worked and paid for. This kind of flexible employment provides limited employment rights compared to standard employment contracts. Such precarious employment is considered hyper-flexible work, in which employers retain the right to alter workforce size, working hours, and employment costs according to their requirements (Reilly, 1998; Rose, 2009). In the gig economy, flexible working hours play a vital role in shaping workers' satisfaction (Veluchamy et al., 2021).

Workers often choose platform work due to the unavailability of formal sector employment opportunities. Platform work provides short-term and unstable income support but fails to provide long-term employment opportunities or job security (Shetty, 2022). Although gig work is promoted as flexible employment, gig workers are often left without job security, legal protection, and social benefits (Stefano, 2016; Ruyter et al., 2018; Sutherland et al., 2020; Joshi et al., 2024). The contingent nature of gig work and volatile rating systems further exacerbate precarity among workers (Sutherland et al., 2020).

The so-called freedom associated with platform work is also not equally distributed

among workers. It primarily benefits educated and highly skilled workers, while less educated or poorly rated workers often experience low pay, fraud, algorithmic control, and health risks (Anwar & Graham, 2020). Similarly, studies of Upwork workers suggest that the contingent nature of gig work and unpredictable rating systems increase precarity while simultaneously providing flexibility (Sutherland et al., 2020). Furthermore, gig workers are excluded from most labour protections under Indian law and often lack access to minimum wages, occupational safety, grievance redressal mechanisms, and social security protections (Sarkar, 2023). The COVID-19 pandemic further intensified labour precarity among platform workers. A large burden fell on Ola workers in the form of increased insecurity, large-scale layoffs, and pressure to continue working during risky conditions to meet financial obligations, such as Equated Monthly Installments (EMIs) for vehicles (Mehta, 2022).

2.3 Algorithmic Control and Power Relations

Unlike traditional employment, platform work does not provide a physical workplace. Instead, platforms rely on algorithms, gamification techniques, and motivational messaging to encourage self-discipline through invisible forms of control. Platforms portray gig workers as independent entrepreneurs while shifting employment-related obligations onto workers themselves. Consequently, workers often end up working longer hours without labour protections and at low rates of pay (Thomas & Baddipudi, 2022). Algorithms are developed in ways that reflect the social and political context of human activity and maintain structural power relations between workers and firms. Thus, algorithmic systems are embedded within employment relations, property relations, and capitalist modes of production (Muldoon & Raekstad, 2023). Because algorithms are perceived as unbiased, efficient, and accurate tools of decision-making, their use has expanded rapidly across sectors (Muldoon & Raekstad, 2023). The use of algorithms has significantly increased in policy-making, criminal justice, credit scoring, and healthcare (Kitchin, 2017). The extensive application of algorithms across sectors has drawn the attention of scholars worldwide. Algorithms are widely used in culture, media, and everyday life, and scholars argue that they are not neutral technical tools but socio-technical systems that shape power relations, influence knowledge production, and structure decision-making processes (Beer, 2017; Striplas, 2015; Ziewitz, 2016). With the increasing reliance on algorithmic systems, digital labour platforms increasingly depend on algorithmic management to allocate work, monitor worker performance, and determine pay rates (Graham et al., 2017). Although gig work is marketed as flexible employment, algorithmic control often results in worker

isolation, surveillance, and low pay (Schreyer, 2021). However, some studies suggest that drivers working for Uber do not always perceive algorithmic control negatively (Wiener et al., 2023). Nevertheless, the replacement of human supervisors by algorithmic systems may have long-term adverse consequences for workers (Lang et al., 2023). Digital platforms simultaneously extract value from workers' labour, personal data, and emotional engagement while portraying platform work as providing freedom and flexibility (Chicchi & Marrone, 2024).

Existing studies on the gig economy and platform labour largely focus on algorithmic control, labour precarity, and employment insecurity, while comparatively less attention has been given to unpaid waiting time as a form of hidden labour extraction (Srnicsek, 2017; Woodcock & Graham, 2020; Veen et al., 2020). Furthermore, limited empirical study has been carried out about platform workers in Delhi from the perspective of labour process and exploitation. Therefore, the present study attempts to address these gaps. Therefore, unpaid waiting time remains an underexplored dimension of platform labour exploitation.

3. Theoretical Background

The employment offered in the gig economy is usually promoted as flexible but gig workers are often left without job security, legal protection, and social benefits (Stefano, 2016; Ruyter et al., 2018). In order to understand these conditions, it is imperative to build a theoretical framework that elucidate labour control, exploitation, and the transformation of work under capitalism. Therefore, the extant study draws upon the labour process perspective given by Karl Marx and labour process theory propounded by Braverman in 1974.

The so-called labor is a development which arises with the interaction of man and nature. In the development method man through his own action intercedes, adjusts and controls the metabolism between himself and nature. By using his own skill level, man works on the material provided by nature to develop useful things. The labor process consists of three essential parts such as (1) purposeful activity, (2) the object on which that work is performed, and (3) the instruments of that work. (Marx, 1976, P-284). The labor process theory is very useful for enlightening the relations of production carried out in the platform economy (Gandini, 2019). Instead of using traditional physical factories, platforms control workers and encourage for self-discipline through algorithms, gamification and motivation messages (Thomas & Baddipudi, 2022).

The gig economy is made up of small, short-term jobs that people search work through digital platform. These platforms main task is to connect companies and workers. The companies want workers who can perform activities such as deliveries and cleaning while workers are looking for work. The jobs are regulated through apps or websites, and there are thousands of people are earning their livelihood. Tassinari, A. & V. Maccarrone (2020). With the increasing reliance on algorithmic systems, digital labour platforms increasingly depend on algorithmic management to allocate work, monitor worker performance, and determine pay rates (Graham et al., 2017).

When a capitalist extract more surplus value by making worker more productive with the introduction of better methods or machines. These better method or machines are helpful to earn subsistence wages for worker in shorter period of time of the day and the surplus labour hour performed by that worker increase. This is referred as relative surplus value. In other words, when for increasing surplus value, productivity of worker is increased, then it is relative surplus value. A capitalist is able to increase absolute and relative surplus value because he has control over workers. firm increases worker productivity by breaking work in small parts, in the expectation of increasing surplus value, it is considered relative surplus value. A capitalist is able to increase absolute and relative surplus value because he has control over workers. Workers had to sell their labor power to capitalist for surviving because they do not have anything except to sell labor and earn for survival (Marx, 1976, pp.432-38)

“Socially necessary labour-time is the labour-time required to produce any use-value under the conditions of production normal for a given society and with the average degree of skill and intensity of labour prevalent in that society” (Marx, 1976, pp. 129).

Marx divides the working day into two parts: (1) necessary labour time is the time which is needed to reproduce the value of the worker's wages (i.e., to cover the cost of their subsistence). (2) Surplus labour time is the extra hours the worker toil after production for his own reproduction, and whose product goes to the capitalist for free. The unpaid labour is the portion of the working day during which the worker produces value for the capitalist without being compensated for it. (Marx, 1976, P 325). In the case of platform workers, there is unpaid waiting time for which workers is not compensated at all.

The reserve army of labour is defined as a necessary product of capitalist accumulation. It is a surplus population of workers that exceeds the average needs of

capital at any given moment. It is flexible labour pool that capitalist uses according to needs. He hires in booms and layoff in the crises period. This reserve army of the pool, depresses the wage of works and increases the surplus values. (Marx, 1976, pp. 781– 789). In the context of platform workers, due to easy entry, the platform creates reserve army of workers to weaken their bargaining power by increasing competition.

In the capitalist system, the operation of labor process largely depends on managerial control over workers. In the managerial control work is organized, oversighted, and supervised to maximize productivity of labor and extract greater labor effort (Braverman, 1974, p. 43).

Although gig workers are formally classified as independent contractors, platform systems exercise significant influence over work behaviour through technological control mechanisms. Such conditions suggest that unpaid waiting time and long hours spent remaining available for platform tasks may represent hidden forms of labour extraction, even when workers are not directly compensated. This perspective is particularly relevant for understanding platform labour, where workers often remain logged into applications for extended periods without guaranteed earnings.

In traditional workplaces, control was exercised through direct supervision by managers; however, in digital labour platforms, managerial authority is increasingly replaced by algorithmic systems that allocate work, monitor performance, determine incentives, and evaluate workers through ratings and feedback systems. Labour Process Theory therefore helps explain how platform workers experience control despite the appearance of flexibility and autonomy. Platform companies claim to offer independent and flexible work, yet workers are often governed through algorithmic management systems that invisibly shape working hours, earnings, task allocation, and behavioural discipline. Recent scholarship suggests that algorithmic management increasingly performs managerial functions through digital systems, reinforcing surveillance and labour control in platform-based employment.

Thus, Marx's labour process perspective and Labour Process Theory provide a useful theoretical foundation for understanding gig work as a form of digitally mediated labour characterized by flexibility alongside control, insecurity, and hidden labour extraction. These perspectives are particularly useful for analyzing unpaid waiting time, long working hours, algorithmic monitoring, and uneven working conditions among platform workers.

4. Method

This study is primarily based on primary survey conducted by researcher during May 2025 to June 2025. A total of 120 survey schedule were filled by researcher. After deleting the items with incomplete filling 105 valid survey schedule were retained for analysis. The response rate of survey schedule recovery was 87.5%. The study areas include hotspot such as Market, Railway station, Malls, Metro Stations and Bus Terminal etc. in Delhi. As there is lack of official statistics about the total workers working in different platforms in Delhi, therefore, the sampling design is not representative and the findings cannot be generalized for other regions in India and around the world. This study contained detailed quantitative and open-ended qualitative questions to gain a better understanding on their working conditions such as hours worked, income, benefits received, and unpaid waiting time. For maintaining heterogeneity within the sample, the data were collected at different hotspot situated in various part of the Delhi, on different days of the week. The platform workers surveyed include cab driver working in ola, Uber, Indrive and Rapido and Auto driver who work under Rapido, Ola and uber. Other platform workers include grocery delivery boy and parcel delivery boy from the different store of Blinkit, Zepto, Swiggy, Bigbasket and Flipkart. The researcher has used multi-stage sampling technique. In the first stage, the researcher has selected Delhi city purposively because it is hub of different kinds of platform workers. In the second stage, five districts have been selected by using lottery method. In the third stage, the researcher has selected 2-3 by using purposive sampling because hotspot area is not equally distributed across five selected districts. The purposive sampling technique has been applied due to lack of fixed free time to talk to workers because their next order alarm is not fixed.

The researcher found the location of the store or hotspot areas where he can find different kind of gig workers, such as cab drivers, porter driver, grocery delivery workers etc. Then the researcher enquired about more hotspot areas to the workers where he can find more stores and similar types of workers. Therefore, the workers at the known places of the researcher have guided and informed to located the new hotspot and store where more workers can be found. It was very helpful to researcher to locate because all the store and hotspot are not situated on the main road or famous location. It was easy to identify ride hailing workers through yellow number plate of car and phone stand in the auto. For identifying delivery workers, they were either in their dress and standing in front of the grocery store of platforms. Therefore, researcher approached these workers through this

identity. So those workers who were willing to respond but they do not have time, so researcher waited and taken their interview in two three intervals when they come back delivering their order. In the case of mobile ride hailing workers, first researcher tells them purpose of study expected time required. So, worker who has time, they given interview few workers have left interview in between due to ride or order has been received. This study is both descriptive as well as analytical in nature. The researcher has used exploratory factor analysis for better explanation.

5. Results & Discussion

This section deals with the detailed information about the major findings of primary survey done by the researcher about the platform workers in Delhi by using descriptive and Exploratory Factor Analysis.

5.1 Social Background of Respondents

The social background of platform workers is scrutinized through various socio demographic characteristics, including age, education, caste, religion, type of housing, and marital status. The social background of the platform workers has been described and these includes age, education, caste, religion, house type and marital status. About 78 percentage of workers falls under the age group of 20-39 and about 14 percent belong to the age less than 20 years while 8.6 percent workers are above 40 years old. It means platform work is basically chosen by young workers. The percentage shares of workers who are having education up to 12th standard are 57 percent. About 28 percent workers are either pursuing or completed graduation level. This indicates that there is lack of alternative job opportunities, which forces them to join gig work. The percentage share of illiterate or very less level of education is only 19 percent. The religion results show that Hindu accounted for 91.4 percent while Muslim and Sikhs accounted for 7.6 percent and 1 percent respectively.

The caste result of platform workers exhibited that the percentage share of General (others), OBC, SC, and ST are 41 percent, 35 percent, 21 percent, and 3 percent respectively. It means 59 percent of the workers belong to socially backward classes. The married and unmarried platform workers accounted for 48.6 percent and 51.4 percent respectively. The house types of the platform workers show that the percentage share of workers with their own house and those staying in rent house are 39 percent and 61 percent respectively. There

are 105 total sample sizes, about 50 percent of platform workers belong to Uttar Pradesh. Bihar, Delhi, and Haryana percentage share are 14.3 percent, 10.5 percent, and 6.7 percent respectively, while Odisha, Rajasthan, and West Bengal percentage share are 1 percent each state.

When considering about the landholding at village, then 39 percent people have responded there is no farmland, while 54 percent workers have farmland less than 2.5 acres, while 7 percent responded that they have farmland between 2.5 acres to 5 acres. Therefore, it indicates that most of the workers are forced to do gig underpaid job due to lack of resources at village. This study findings matches in terms of concentration of socially disadvantaged groups in gig work from other studies (De Neve & Meda, 2023). A large share of workers lack access to welfare benefits such as ration cards, reflecting institutional exclusion.

5.2 Key challenges associated with platform-based work

The table 1 shows that about 68.6 percent workers are working for only single platform. When looking at the occupational type, grocery delivery workers accounts for (66.7%), followed by ride-hailing car drivers (26.7%), while auto drivers account for only 6.7 percent. This shows that delivery-based gig work is most accessible for vulnerable migrants' workers.

Working hours and labour intensity: While talking about in the context of working hours of platform workers, then it seems quite labor-intensive work. The result exhibits that about 82.9% of workers spend more than 8 hours per day on gig work, it means workers are end up doing excessive work. There are about 18 (17.0%) workers who are also engaged in the subsidiary employment in addition to gig work and about 50.0 percent workers are working more than 6 hours. This indicates the problem of work-life balance associated with the gig workers.

Duration in gig employment: The table indicates that approximately 60.0 percent of workers have been working gig works for more than one year while workers working for 1-5 years group account for 48.6 percent.

Earnings and income dependence: The high dependency of platform workers can be understood with the below figure. About 83 percent workers are full-time gig workers, and

about the same percentage of workers reported that gig work is their main source of income. The workers engaged in the self-employment accounts 7.6 percent while workers engaged in other types of work are 17.1 percent. These data confirms that workers are working in the gig work, not by choice but by force due to extreme vulnerabilities. In spite of having freedom to set their own working hours as per their convenience but workers freedom to choose working hours are constrained by the availability of work and platform created incentive. The uneven growth of technical infrastructure between rural and urban areas creates unequal access to internet facilities among poor and elite social groups. Consequently, inequalities in online participation tend to intensify existing social inequalities (Shaw et al., 2023).

Table 1: Nature of Work

Number of Platform working		Types of Platform workers	
Number of Platform working	Worker s (%)	Type of worker	Workers (%)
1 68.6 Ride-Hailing (Auto)	6.7	2 14.3 Ride-Hailing (Car)	26.7
3 10.5 Grocery Delivery boy			66.7
4 6.7 Total	100	Total	100

Source: Compiled from primary survey data.
Table 2 compares the monthly income and working hours of workers who are engaged in only Platform work and platform workers who are engaged in the subsidiary activities also along with gig work. The figure given in the parenthesis are in percentage terms while working hours is represented in hours and while average monthly income has been expressed in terms of Rupees. The data about monthly income of the workers engage in the subsidiary work have been described below. There are only 15 workers who are also working subsidiary activities along with gig work. The workers who are earning between 10000-20000 accounts for 66.7 percent while workers who earns between 20,000 and 30000 accounts for 13.3 percent. There are only 6.7 percent workers who earns more than 30000 per month from the subsidiary activities. This reflect that the subsidiary income is just complementary income for gig workers. The Workers who are engaged in the subsidiary work, they are doing both work due to vulnerability rather than by choice. The careful observation of the data, it is quite clear that gig work constitutes the main income source for a large section of platform workers. Out of 105 gig workers, the workers who earn between 10000 and 20000 accounts for 56.2 percent while those who earns in the income range of

20000 and 30000 accounts for 23.8 percent. The percentage share of platform workers who earn less than 10000 and above 30000 per months are 16.2 percent and 3.8 percent respectively.

Table 2: Working hours and Monthly income

Total hours devoted for work		Monthly income	
Category	Platform work (%)	Category	Platform work (%)
	Subsidiary work (%)		Subsidiary work (%)
less than 4 hours	16.67	less than 10,000	22.22
4-6 hours	27.78	10-20K	56.19
6-8 hours	7.62	20-30K	11.11
>8 hours	5.56	more than 30K	3.81

Total 100 100 Total 100.00 100.00 Source: Compiled from primary survey data.

When comparing the monthly income from subsidiary activities, gig work provides more income but it does not is enough for living in the cities. Subsidiary work which is part-time in nature, so about 60.0 percent of respondents works 6 to 8 hours per day while and 33.3 percent work devote their 4–6 hours. There are only 6.7 respondent who are engaged in the subsidiary activities and devote their less than 4 hours for this work. Since most of the workers are devoting usually less time for subsidiary work, so it indicates that it is not main occupation of the platform workers. In contract, a large section of respondents (85.7 percent) reported that they work for more than 8 hours. The percentage share of workers who work less than 4 hours and 4–6 hours are 2.8 percent and 7.6 percent respectively. This itself shows that platform worker ends up by working more than the normal working hours due to vulnerability not by choice. If they can earn enough to meet their ends during standard working time eight hours, then why they will do extra work. There are many problems encountered by platform workers such as job insecurity, inconsistent income, and lack of social protection (Gaur and Sharma, 2023). Using republican political theory, Hickson (2024) explain that it is a myth that gig work enhances freedom and autonomy. Hence it can be inferred that although gig work provides more income compare to subsidiary work but it is at the expense of long working hours in the economy which provides neither any social security nor income stability.

Table 3 present how the mean working hours and average working days differs among auto

driver gig workers, cab driver gig workers and grocery delivery gig worker. It is quite visible from table that daily working hours for auto driver, cab driver and grocery delivery boy are 12.82 percent, 12.16 percent and 11.38 percent respectively. Although there is very minor difference in the working hours daily but cab driver is working longer hours compared to auto driver and grocery delivery boys.

Table 3: Platform workers average working hours and working days.

Auto driver	
Mean Working hours daily	12.16
Mean monthly working day	27.33
Cab driver	
Mean Working hours daily	12.82
Mean monthly working day	27.71
Grocery delivery boy	
Mean Working hours daily	11.38
Mean monthly working day	26.54

Source: Compiled from primary survey data.

From table 3, it is evident that the average working hours for workers greater than 11 hours, this underscores the insecurity of platform workers. When looking at the average monthly working days, the platform workers end up working more than 26 days. This shows that platform workers tend to work as many days as possible and as many hours as possible until there is some urgency such as health issues and some unwanted incident at home.

Table 4: Vulnerability of platform workers (%)

Categories		Yes	No	Don't know
Do you think Platform exploit you?		96.2	3.8	0
Do you think Platform forces you to work long hour?		70.5	25.7	3.8
Exploitation through unpaid waiting time		93.3	2.9	3.8
Mandatory task acceptance		13.3	82.9	3.8
Working odd hours		34.3	61.9	3.8

Source: Compiled from primary survey data.

Table 4 captures platform workers' perceptions of vulnerability and exploitation. The results shows that there is insecurity at extreme when looking at the platform workers working in different types of work. The view of the platform workers about the platform companies about the exploitation is not incidental but a widespread and structural feature of platform work. A large section of gig workers (96.2 percent) reported that they have experienced the exploitation strategy adopted by the platforms company for increasing their profit at the expense of exploitation of vulnerable section of society who are forced to work under the

gig company not by choice but by force. When it is asked to respondents that what are the ways through which you experience that platform companies are exploiting workers. About 70.5 percent workers reported that due to algorithmic management and lucrative but unarchivable target indirectly forces them to work longer hours and it reinforces the previous finding from above table about the excessive daily working time. The possible reason reported by the workers are algorithmic incentives, penalties, and income uncertainty compel workers to remain logged in for extended periods. The next big factors responsible for exploitation of platform workers are unpaid waiting time and 93.3 percent of the workers believes that it also exploits worker by not paying the money even when they are on the work. The invisible nature of the employment relationship is a major factor contributing to the exploitation of gig workers. This finding aligns with Sarkar (2023), who argues that the ambiguous employer–employee relationship exacerbates the exploitation of gig workers. Similarly, Azhar (2017) contends that digital technology used by platforms represents a new form of labour exploitation by capital. Therefore, the present findings suggest that platforms exploit workers through algorithmic control, which is consistent with the arguments advanced by Sarkar (2023) and Azhar (2017). The unpaid labor is a main characteristic of platform economy, it reduces workers earning prospects as well as job security. The digital platform by using algorithms create a situation where workers do unpaid work in the form of waiting time because waiting time is linked to unpredictable earning opportunities (Veen, Barratt, & Goods, 2020).

The uncertain order times, and working times do not provide sufficient time to take rest or have food because there is no fixed timing for next order. In the case of no order for longer time, it is not certain when the next order will come, so in the absence of any fixed place for rest, they are always on their vehicles, so delivery boys cannot take proper rest. Although the cab driver can take rest in their car but there is no free fixed space for parking their vehicles, so they do not have fixed to take rest or lunch. There are 34.3 percent workers who reported that they are forced indirectly to work during unusual hours but 61.9 percent workers do not agree that they are compelled to work during unusual hours. Therefore, it can be said that platform workers are not exploited through working at lower wage rate but also working in the unsafe time hours. The income of delivery boys and ride hailing workers is unstable, heavily dependent on incentives and demand, with little or no job security. Although platform work offers short-term income, it does not help workers move up economically. In fact, it may worsen inequality and financial insecurity (Shetty, 2022).

5.3 Factor Analysis Results for Platform Workers.

In this section, the researchers describe the procedure of exploratory factor analysis and results.

Reliability and Exploratory Factor Analysis

As it is required to check internal consistency reliability before moving to do the Exploratory Factor Analysis (EFA). Therefore, reliability test was performed and the reliability of 16 Likert scale question is 0.81 which indicate good the internal consistency reliability. Therefore, it is good for analysis of Exploratory Factor Analysis. In the next step, the Kaiser-Meyer-Olkin (KMO) which is a measure of sample adequacy and Bartlett’s Test of Sphericity has been tested. The KMO value is 0.816 and this value shows good sampling adequacy, as a result it is right to say that correlation matrix is suitable for factor analysis.

Table 5. Reliability and Sampling Adequacy Statistics

Measure Value	
Sample Size (N) 105	
Number of Items 16	
Overall	Cronbach’s Alpha 0.81
KMO Measure 0.816	
Bartlett’s Test χ^2 (df)	
1672.529 (120)	
Significance $p < 0.001$	
Source: Author’s calculation based on Exploratory Factor Analysis (EFA).	

Bartlett’s test of sphericity tests determines whether there are significant correlations between any of the different items. A significant value of < 0.05 indicates that a factor analysis may be worthwhile for the data set (Sigudla & Maritz, 2023). Since the significance value was less than 0.05, the null hypothesis was rejected, indicating that the variables were sufficiently correlated for factor analysis. The factor analysis was performed in IBM SPSS Statistics using Principal Component Analysis (PCA) with Oblimin rotation. An oblique rotation method was selected because the dimensions associated with platform work were theoretically expected to exhibit interrelationships. Factors with eigenvalues greater than one were retained according to Kaiser’s criterion.

Table 6. Total Variance Explained

Factor	Eigenvalue	Variance Explained (%)	Dependence
Cumulative	6.012	37.576	37.576
Algorithmic Control	3.112	19.453	57.029
Economic			
Job Satisfaction	2.824	17.653	74.682
Work Experience & Perception	1.313	8.207	82.889

Source: Author's calculation based on Exploratory Factor Analysis (EFA). The sixteen Likert scale statements were designed to index four factors, namely algorithmic control, Economic dependence, Job satisfaction and work experience and perception. Together all these four factors explain 82.889 percent variance. While looking at the rotated pattern matrix, it shows a clear and interpretable factor structure with high loadings and minimal cross-loadings across dimensions. The first factors which explain 37.57 percent of the total variance. Factor 1 had strong positive loading on the first six items (Co_2, Co_1, Co_5, Co_4, Co_3 and Co_6). The value of Factor loadings falls in the range of 0.817 to .943. This factor was interpreted as Algorithmic Control.

Table 7. Rotated

Pattern Matrix	Items	Economic	Job	Work	Communality						
Algorithmic											
	Control	Satisfaction	<u>Perception</u>								
	Dependence	Experience &									
Co_2	0.943	0.880	Co_1 0.935	0.866	Co_5 0.930	0.881	Co_4 0.916	0.825	Co_3 0.915	0.839	
Co_6	0.817	0.744	Ec_5 0.960	0.930	Ec_1 0.922	0.848	Ec_4 0.885	0.827	Ec_2 0.876	0.827	Ec_3
0.625	0.383	Jo_3 0.975	0.912	Jo_4 0.900	0.949	Jo_2 0.796	0.926	Jo_1 0.889	0.863	Jo_5 0.86	0.763

Source: Author's calculation based on Exploratory Factor Analysis (EFA).

Source: Author's calculation based on Exploratory Factor Analysis (EFA).

Note: Extraction Method = Principal Component Analysis (PCA); Rotation Method = Oblimin with Kaiser Normalization; Factor loadings below 0.10 were suppressed.

The second factor explain 19.45 percent total variance. Similarly Factor 2 was strongly associated with five items: Ec_5, Ec_1, Ec_4, Ec_2 and Ec_3. The value of factor loading ranges from 0.625 and 0.960. This factor is named as Economic Dependence. The third factor is made with three items linked with workers evaluation of work conditions and satisfaction with platform labor. The subsequent three items (Jo_3, Jo_4 and Jo_2) had high loading and its values ranges from 0.796 to 0.975. It explains 17.65 percent total variation. This factor is considered as Job Satisfaction. The last factor, subjective perceptions and experimental dimensions of platform work, had strong loadings for items Jo_1 and Jo_5. The factor loading value is extended in the range of 0.860 to 0.889. This factor is named as Work Experience and Perception. Although this factor has only two

items, but both indicators demonstrated strong loadings and conceptual consistency. Hence it is suitable for keeping in the model.

Table 8. Reliability of Extracted Constructs
Construct Number of Items
Cronbach's Alpha

Algorithmic Control	6	0.95	Economic Dependence	5	0.91	Job Satisfaction	3	0.83
Work Experience & Perception							2	0.77

Source: Author's calculation based on Exploratory Factor Analysis (EFA). The communalities for most variables surpassed 0.70, it shows that a large proportion of variance in the observed variables was explained by the extracted factors. Only one item (Ec_3) presents a comparatively lower communality (0.383). But it was included in the model due to its theoretical relevance and satisfactory loading within the Economic Dependence construct. Now the reliability has been checked separately for each construct by using Cronbach's Alpha coefficients. The value of Cronbach's Alpha coefficients 0.95 which is excellent. The coefficient for the Economic Dependence is 0.91 which is also very good. The coefficient of job satisfaction is 0.83 which is also very good while the coefficient for work experience and perception is 0.77 which is also acceptable. Overall, the findings indicate that the measurement instrument possesses satisfactory internal consistency, construct validity, and dimensional stability. The extracted factors provide a statistically robust and theoretically meaningful framework for analyzing the multidimensional experiences of gig workers operating under platform-mediated labor arrangements.

6. Policy Implications

The rapid expansion of digital platforms has transformed labour market relations by generating new forms of employment. The present study examined the socio-economic conditions, labour precarity, and working experiences of platform workers in Delhi through a primary survey and exploratory factor analysis. The study shows that platform work in Delhi is characterized by long working hours, moderate income concentration, weak legal protection, and high dependence on digital platforms. Workers strongly believe that platform commission rates, fatigue, and algorithmic monitoring as major factors reducing earnings. Income distribution analysis shows that the majority of workers remain confined to the

middle-income range of ₹10,000– ₹20,000, with very few progressing beyond ₹30,000 despite excessive working hours. The platform workers in Delhi end up working more hours than standard employment hours norms. The platforms extract more profit through an increased workload, decreased incentives and unpaid waiting time which distorts work-life balance of platform workers.

The study's concluding observation shows that the gig economy in Delhi represents a digital extension of informal labor rather than a break from it. Platform-based employment reproduces inequality through economic dependence, welfare exclusion, and weak labor protections. In order to promote inclusive economic policies, it is imperative to recognize the problem associated with long-working hours and long and uncertain unpaid waiting time. There is not only need of putting cap on the maximum working hour which is justified on the ground that there is flexibility of choosing working hour. Workers are working longer hours and working in the odd shift not just by choice but by force which is created by algorithmic control. There is also a need of minimum earning for a platform worker.

7. Conclusion

The emergence of the digital economy has transformed the structure of the traditional labor market and the main reason behind these are constant growth of temporary, contingent and platform work. The income of delivery boys and ride hailing workers is unstable, heavily dependent on incentives and demand, with little or no job security. The invisible nature of the employment relationship is a major factor contributing to the exploitation of gig workers. The cab driver is working longer hours compared to auto driver and grocery delivery boys. The workers are working in the gig work, not by choice but by force due to extreme vulnerabilities. The workers are not able to balance their life with work due to long working hours. The result of EFA has identified four important dimensions of platform workers' experiences, namely algorithmic control, economic dependence, job satisfaction, and work experience and perception.

There are few limitations of the study (1) the sample size is small from selected hotspot locations in Delhi; therefore, the findings cannot be generalized. This is based on the non-probability sampling method which mark questions for its accuracy. Finally, although exploratory factor analysis was useful for identifying latent dimensions of platform workers'

experiences, the extracted factor structure may be further validated in future studies through larger sample sizes and advanced statistical techniques such as Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). Since platform workers face unstable income and employment insecurity, institutional mechanisms for social protection should be strengthened. Based on the study, the researcher proposed that there should be some minimum compensation for unpaid waiting time and some safety measure should be undertaken for the safety of platform workers.

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