

Measuring The Gig Economy in Indonesia: Typology, Characteristics, and Distribution

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Abstract. *Work in the gig economy is defined as short-term and task-based jobs mediated by digital platforms. In Indonesia, the emergence of an online motorcycle taxi driver platform in 2015 marked the discourse about the gig economy as the future alternative of jobs on the one hand, and as a new form of exploitation of labor on the other hand. This study is the first to define the typology of the gig economy and identify the platforms of the gig economy service providers in Indonesia. Furthermore, this study estimates the number of gig economy workers by using micro data from the National Labor Force Survey (Sakernas) released by the Central Statistics Agency. It was found that 0.3 to 1.7% of Indonesian workers participated in the gig economy as their primary job. This study also compares the characteristics of gig workers in the transportation sector and in the other service sectors with the overall demographics of the workforce. It was found that gig workers shared more characteristics with the formal workers than with the informal workers. Finally, this study maps the distribution of gig workers throughout Indonesia at the city/district level. It can be concluded that the gig economy is an urban phenomenon. Most gig workers in the transportation sector are concentrated in the provincial capital and in Metropolitan Jakarta. Meanwhile, gig workers in other service sectors are distributed more in tier 2 cities in Java.*

Keywords: *Gig economy, gig worker, digital worker, labor economics, jobs*

Abstrak. *Pekerjaan di dalam ekonomi gig didefinisikan sebagai pekerjaan berbasis tugas jangka pendek yang dimediasi oleh platform digital. Di Indonesia, kehadiran platform pengemudi ojek online di tahun 2015 menandai ramainya wacana mengenai ekonomi gig sebagai kesempatan pekerjaan di masa depan di satu sisi dan juga sebagai bentuk baru eksploitasi pekerja di sisi lain. Studi ini merupakan yang pertama mendefinisikan tipologi ekonomi gig dan memetakan platform penyedia layanan ekonomi gig di Indonesia. Lebih lanjut studi ini juga mengestimasi ukuran pekerja ekonomi gig menggunakan data mikro survei angkatan kerja nasional (Sakernas) yang dirilis oleh Badan Pusat Statistik. Didapatkan bahwa terdapat 0,3 hingga 1,7% dari angkatan kerja Indonesia yang menjadikan ekonomi gig sebagai pekerjaan utamanya. Kemudian, studi ini membandingkan karakteristik pekerja gig di sektor transportasi dan di sektor jasa lainnya dengan demografi pekerja keseluruhan. Didapatkan bahwa pekerja gig memiliki karakteristik lebih mirip dengan pekerja formal daripada pekerja informal. Terakhir, studi ini memetakan sebaran pekerja gig di seluruh Indonesia hingga ke tingkat Kota/Kabupaten. Dapat disimpulkan bahwa ekonomi gig merupakan fenomena urban. Pekerja gig di sektor transportasi banyak terkonsentrasi di Ibukota provinsi dan di Metropolitan Jakarta. Sementara pekerja gig di sektor jasa lainnya lebih terdistribusi ke kota-kota tier 2 di Pulau Jawa.*

Kata kunci: *Ekonomi gig, pekerja gig, pekerja digital, ekonomi tenaga kerja, pekerjaan*

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Introduction

Background and Purpose

Over the past few years, the gig economy has been the subject of much discussion. Some say the gig economy is in line with a spirit of flexibility and entrepreneurship, making it a relevant part of future trends in the variety of available jobs (example: Kessler, 2018; Manyika et al., 2016). On one hand, participating in the gig economy is seen as an alternative for those who do not like traditional office work models with rigid working hours. On the other hand, some say the gig economy is a continuation of neoliberal exploitation practices in which capital owners indirectly control workers by exploiting the ambiguity of the term “partnership” (example: Fleming, 2017; Zwick, 2018). The gig economy has emerged as a result of new contractual models and work organizations supported by technological changes, globalization, and the weakening of labor unions (Woodcock and Graham, 2019). According to this perspective, the gig economy is closely related to precariat workers who are paid cheaply, work on an erratic contract basis, and have a low level of job security.

In Indonesia, the discourse on the gig economy has been in the limelight in recent years. This discourse began with the rise of online *ojek* (motorcycle taxis) in early 2015, which offered a partnership scheme to its workers. In addition to the *ojek* business model that gives a ride to passengers (to get to their destination), this intermediary application pattern was then replicated for car taxis, food delivery, and courier services. In general, the gig economy is seen as a new opportunity amid the limited jobs in the formal sector in Indonesia. Until now, people have flocked to register to become partners with online motorcycle taxi and courier companies because there are few other decent work options.

Apart from online motorcycle taxi workers, there has also been a trend toward remote work that utilizes digital applications as intermediary media. With this work pattern, work is no longer limited by geographical distance. A software engineer, for example, can work in Bandung by serving corporate clients in New York with a result-based project contract scheme through an online freelance application such as Upwork. Even though they appear to be significantly different, there are similarities between remote workers and online motorcycle taxi workers. Both groups are part of the gig economy ecosystem due to their characteristics as freelance workers and the fact that their work is mediated by digital platforms.

There have been several previous studies that examined the gig economy phenomenon in Indonesia which focused on specific case studies, whether these studies concentrated on online motorcycle taxi drivers or online freelancers who work remotely. Unfortunately, there have not been studies that describe the gig economy in Indonesia as a whole, including the typology of workers, service provider platform companies, population size, and geographical distribution. This study is the first to provide a complete picture of gig economy workers in Indonesia.

There are two novelties offered by this study. First, this study attempts to align the definition of the gig economy, which differs from one researcher to another. Although the definition of this term in the social sciences has always been disputed, recently, more of a consensus has been reached regarding its meaning. This study adheres to the definition given by Woodcock and Graham (2019), who define the gig economy as consisting of a variety of service jobs performed by individual workers and mediated by digital platforms. This study also explains the typology of the gig economy and the gig service provider companies that are dominant in Indonesia.

Second, this study attempts to measure and identify the distribution of gig economy workers in Indonesia using available administrative data. Even though it is not perfect and has various limitations, the data from the National Labor Force Survey (Sakernas) provided by the Central Statistics Agency (BPS) can at least roughly estimate its magnitude. In the end, this study provides recommendations regarding improvements that policy makers can make to be able to measure the size of the gig economy through a national survey. This estimation is important so that the policies can be designed not only based on assumptions but also on clear quantitative data.

Definition & Typology of Gig Economy

The term “gig economy” became popular first in the United States after the great recession in 2008 (Brown, 2009). In the midst of the crisis, existing jobs were dominated by short-term projects and workers were recruited in non-traditional ways with alternative contracts, taking on roles like consultants or result-based independent contract workers. The term “gig” was adopted from the concept of amateur musicians who performed “gig” concerts at various cafes. That is, gig workers are synonymous with those who work without a permanent office or employer (Friedman, 2014).

However, in later literature, the term gig economy has been specifically applied to short-term, task-based jobs mediated by digital platforms (Woodcock & Graham, 2019; Schwellnus, 2019; Charlton, 2021). Why is the specific application of this definition important? The existence of a digital platform that acts as a mediator is what differentiates gig workers from other professional workers such as outsourced workers, workers without contracts, freelance workers, or independent contractors. Although the digital platform seems to function merely as an intermediary medium, in fact, it controls workers indirectly. So, it is often referred to as “the invisible management figure,” “shadow employer,” or “algorithm-based management” (Gandini, 2019; Rosenblat & Stark, 2016; Lee et al., 2015).

Stanford (2017) identified five characteristics of the gig economy: (1) work is done based on client requests; (2) compensation is paid based on results and measured by work output, not hours worked; (3) workers are asked to provide their own means of production; (4) there is a mediator who connects workers and clients; and (5) a digital platform acts as the mediator, whose job is to supervise work and facilitate payment transactions. With these five characteristics, we can see that the rise of the gig economy is driven by not only the disruption of internet technology and the rise of intermediary application companies, but also by a continuation of the new trend of work organization that started in the late twentieth century.

Amidst the challenges of globalization, companies are required to remain flexible and focus on their core competencies. As a result, some work is outsourced to third parties using non-standard contracts. The gig economy is another form of an outsourcing scheme in which jobs are provided by individuals rather than agency companies. This work model also takes place along with the weakening of labor unions and the restructuring of increasingly flexible employer-worker relations. As a result, workers as individual entities have weaker bargaining power. Occupational risks are transferred from the company to the individual, including meeting retirement needs, buying health insurance, and providing production equipment. Initially, non-traditional work patterns like this were widespread in the low-skilled service sector. Today, however, all jobs can be transformed using non-traditional work models. Guy Standing (2014) termed this new group of workers “precariat workers.”

The internet and digital technology have changed the global business landscape through the rise of a platform economy that emphasizes the principle of sharing (sharing economy) and collaborative consumption that utilizes the crowd. Platform provider companies offer a two-sided business model that brings producers and consumers together. Initially, the model traded certain products.

The gig economy is part of the platform economy in which it offers not physical products but services from workers.

The platform, functioning as an intermediary, forms a triangular work relationship with service providers and consumers (see Figure 1).

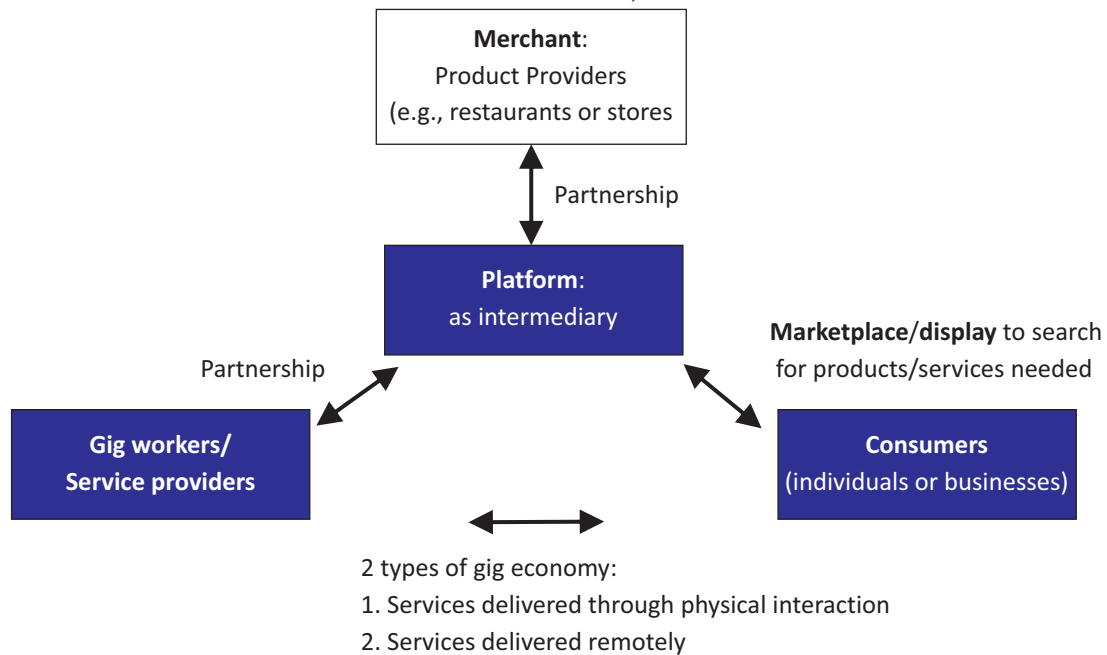


Figure 1.

Triangular Relationship Models in the Gig Economy (adopted by authors Stewart and Stanford, 2017 and Barratt et al., 2020)

The platform takes a commission from the sale of services by providing job guarantees to consumers. This model of intermediaries provides risk mitigation to consumers in comparison to directly looking for the job service providers themselves. There are many different gig economy platforms, so the triangulation of relationships can be different from one to another. In a food delivery or courier service business model, there is a fourth party involved as a product provider (merchant) that consumers want. In this case, the gig workers provide delivery services from merchants to consumers. The platforms often take commissions from both gig service providers and merchants as product providers

The gig economy itself consists of two very different categories. First, the online-based gig economy where all work is delivered without face-to-face interaction. This model of work has existed since the early 2000s, only to become increasingly popular after massive internet penetration in developing countries..

Many companies in the United States outsource some service-based jobs to individual workers in Asia because of their low wages. As a result of the rise of digital platforms that mediate remote work, Graham and Anwar (2019) introduced the term “planetary labor market.” The existence of the platform provides an opportunity for digital workers to find work outside the local market and sell their services regardless of where the employer's location is. Kassi and Lehdonvirta (2018) categorize six main types of work that are common in this online gig business model: professional services, data input and administration, multimedia and creative work, sales and marketing, software and technology development, and writing and translation.

There are many platform companies engaged in this field. One of the most dominant and popular is Upwork (founded 2015), a United States-based company that was the result of a merger between Elance (1999) and Odesk (2003).

Faisal et al. (2019) identified the dominant platforms that are widely used by online gig workers in Indonesia, including Upwork (United States), Freelancer (Australia), and Fiverr (Israel). In Southeast Asia itself, recently emerging gig applications are growing rapidly, including companies such as Fastwork (Thailand), Projects.co.id (Indonesia), and Sribulancer (Indonesia).

Secondly, there is the location-based gig economy, in which work gets done through face-to-face interaction. The service jobs offered are actually traditional jobs, but the platform brings together clients and workers more efficiently. The most common model is that of a ride-hailing service provider. Brail (2020) identified 11 companies in this sector that have entered the Unicorn category, or a valuation of USD 1 million, including Uber (United States), Didi (China), Lyft (United States), Grab (Singapore), Ola (India), Gojek (Indonesia), Cabify (Spain), Gett (Israel), Careem (Dubai), 99 (Brazil), and Taxify (Estonia). Indonesia itself is dominated only by two big players, namely Gojek and Grab. Even though Uber is the pioneer in this sector and claims to operate in 2,600 cities around the world, Uber's business model cannot compete with Gojek and Grab, so Uber Southeast Asia was eventually acquired by Grab in 2017.

Other business models in the location-based gig economy category are food delivery and courier services, the dominant international players being Deliveroo, Just Eat, and Uber Eats. However, what is interesting in Indonesia is that Gojek and Grab also work on this business model. Later, Shopee (Singapore) became a competitor of the two giants by launching a courier and food delivery service. Several other players have just entered the gig economy ecosystem in Indonesia in recent years and are not as big as Gojek and Grab as early players, including Lalamove (Hong Kong), Maxim (Russia) and Anteraja (Indonesia). Figure 2 shows two typologies of the gig economy and the main players in Indonesia

The dominance of Gojek and Grab and Uber's failure to penetrate the Indonesian market can be explained by the applications of a “super-app” model that is more suitable for Indonesian people. A “super-app,” as a one-stop service, is required to be able to meet the daily needs of consumers in an integrated manner, starting with online taxi services, courier services, and food delivery services, which are combined with financial technology for paying electricity, credit, insurance, and various other needs (Lee, 2021). On the other hand, Uber adopts a “western-centric” business model that replicates the simple template of the online taxi application model without adapting to local needs and context (Davis et al., 2018). In contrast, Gojek and Grab have aggressively expanded their business models to include various derivative products and were inspired to build “super-apps” like the model offered by Chinese tech giants such as WeChat and Alibaba.

Overview of Studies on the Gig Economy in Indonesia

Although still limited in quantity, there is some previous literature on the gig economy that uses gig workers in Indonesia as a case study. These studies show that the Indonesian context offers novelty in the gig economy discourse which is different from the context of developed countries. For example, online motorcycle taxi drivers in Indonesia have a tendency to build a community with high collective spirit (Ford and Honan, 2019). The existence of a “base-camp” and an informal organization for online motorcycle taxi drivers, for instance, is unique to Indonesia and not found in developed countries.

In general, almost all discussions on the gig economy in Indonesia focus on location-based gig economy workers, especially online motorcycle taxi drivers. Nastiti's study (2017) is the first to take on the case of platform exploitation of online motorcycle taxi drivers hiding behind the rhetoric of flexibility, followed by Izzati (2018) who emphasizes the urgency of regulating gig worker relations and platforms, issues which have so far been absent from labor regulations in Indonesia.

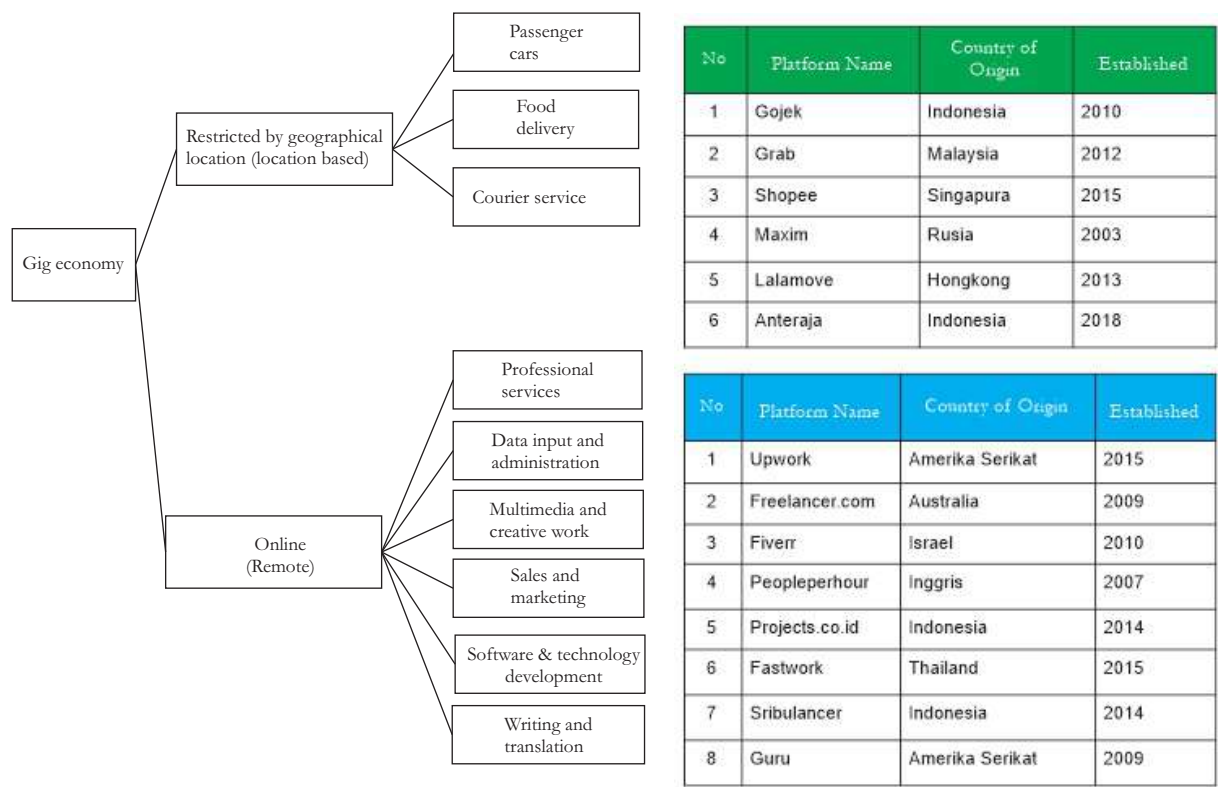


Figure 2.
Typology and ecosystem of the gig economy in Indonesia

Many studies have elaborated on the collective agency efforts of online motorcycle taxi drivers who are attempting to adapt to reality and fight platform domination (Ford & Honan, 2019; Frey, 2020; Panimbang, 2021; Nowak, 2021); while Mustika & Savirani (2021) focus on driver resistance at the individual level, which is then spread through social media networks so that it becomes a collective movement.

Online motorcycle taxi drivers have been badly affected by the presence of the Covid-19 pandemic, especially because of the threat of exposure to the virus, restrictions on mobility, and increased competition due to high unemployment (Rachmawati et al., 2021). As an adaptation effort during the pandemic, gig workers are also looking for alternative jobs through social media (Octavia, 2021). Joewono et al. (2021) focus on job satisfaction, performance, and other factors that correlate with both issues among online motorcycle taxi drivers.

Many cases regarding the online motorcycle taxi phenomenon in Indonesia have also been discussed from a transportation perspective, but are not directly related to the discussion of the gig economy (example: Irawan et al., 2020a and 2020b). These studies focus more on how online motorcycle taxis change urban transportation patterns from the perspective of their users.

On the other hand, studies that focus on online gig workers in Indonesia are still limited. Faisal et al. (2019) used a web crawling and web scraping approach to map the number and distribution of online gig workers in Indonesia by comparing several available platforms. In addition to these studies, other studies regarding online freelance platforms do not focus directly on workers in the gig economy, but on users (Asih et al., 2019) and the business processes of gig platforms in Indonesia in general (Gandhi and Sucahyo, 2021). Table 1 provides a detailed description of studies that address the gig economy in Indonesia.

Table 1.
Overview Of Studies On The Gig Economy In Indonesia

Studies	Category	Case study and data collection	Findings
Nastiti (2017)	Symposium article in the field of social science	Digital ethnography and online motorcycle taxi driver interviews.	The collective action of online motorcycle taxi drivers is driven by dissatisfaction with company practices that tend to be exploitative. Platform companies exploit loopholes in labor laws, use technology to control workers, and hide behind the rhetoric of freedom and entrepreneurship.
Izzati (2018)	Arryman Symposium	A review of legal documents regarding online transportation in Indonesia and a survey of online motorcycle taxi drivers in Jakarta, Yogyakarta and Banruwangi .	The partnership relationship between online motorcycle taxi drivers and platform companies has not been regulated in labor law in Indonesia. With this status, the driver does not get protection from the state or from the company. Therefore, labor regulation that accommodates the gig economy must be an urgent priority to ensure the sustainability of this work in the future.
Ford and Honan (2019)	Legal working papers	Surveys and interviews with online motorcycle taxi drivers in Jakarta, representatives of Gojek companies, and representatives of trade unions in the transportation sector.	Many online motorcycle taxi drivers in Indonesia are members of small voluntary-based communities that work according to the logic of mutual benefit. Such an organization is effective as a means of strengthening social cohesion among workers, but it is not sufficient to provide a structural effect and build collective and solidarity actions as is done by trade unions.
Faisal et al. (2019)	SSRN working paper	Web crawling and scraping of the online gig economy service provider platform.	The majorities of online gig workers in Indonesia are in the creative and multimedia category, earning an average of 3.4 million IDR per month, and are concentrated on the island of Java, especially West Java, East Java, and DKI Jakarta.
Frey (2020)	Journal articles in business management and industrial relations	Ethnography and interviews of online and traditional <i>ojek</i> drivers in Bandung and Yogyakarta.	Online motorcycle taxi (<i>ojek</i>) drivers and traditional <i>ojek</i> drivers have similarities in carrying out grassroots movements. Both of them claim their respective territories and have a basecamp as a gathering place. This strategy is used to reduce the effect of job atomization.

Table 1. (Continued)
Overview Of Studies On The Gig Economy In Indonesia

Studies	Category	Case study and data collection	Findings
Mustika & Savitriani (2021)	Journal of Industrial Relations	Interviews and FGDs with online motorcycle taxi drivers in Yogyakarta.	To increase income and as a form of resistance to capital owners, online motorcycle taxi drivers express their resistance individually, including by using fake GPS provider applications. These individual means of action are then shared collectively through social media.
Panimbang (2021)	Social science journal articles (<i>Globalizations</i>)	Interviews and FGDs with online motorcycle taxi drivers in Jakarta and its surroundings.	Online <i>gig</i> drivers demonstrate new collective practices that are different from traditional unions. This collectivity is built via the digital medium as well as face-to-face interaction.
Rachmawati et al. (2021)	Journal articles in business management and industrial relations (<i>Work Organization, Labor & Globalization</i>)	Interviews and FGDs with online motorcycle taxi drivers in 7 cities in Indonesia before and after the pandemic.	The term “work partner” is an excuse for platform companies to reduce labor costs and avoid obligations to workers. The pandemic has exacerbated conditions for workers, including the threat of exposure to the virus, restricted mobility, and increased labor surplus and unemployment.
Nowak (2021)	Social science journal articles (<i>Environment and Planning A: Economy and Space</i>)	Ethnography and interviews of online motorcycle taxi drivers in Jakarta.	As gig workers, online motorcycle taxi drivers build social networks with the aim of mitigating work risks and uncertainties. They help each other through various initiatives, such as emergency units, collective insurance, and mutual protection.
Loewono et al. (2021)	Social science journal articles (<i>Sustainability</i>)	Survey of online taxi and online motorcycle taxi drivers in Bandung.	Job satisfaction of online motorcycle taxi drivers is influenced by personal characteristics, work habits, and perceptions of their work as gig workers. Drivers who have high job satisfaction tend to be more productive.
Octavia (2021)	Journal articles in the field of business management related to organizational behavior and industrial relations (<i>International Labor Reviews</i>)	Interviews with online motorcycle taxi drivers and domestic workers using platforms and online observations on Twitter and the Service Directory.	During the pandemic and when working through limited platforms, gig workers (online motorbike taxi drivers and online domestic workers) used the internet and social media as a means to get alternative job opportunities. However, compared to the internet and social media, platforms provided more convenience in bringing workers and employers together.

Research Methodology

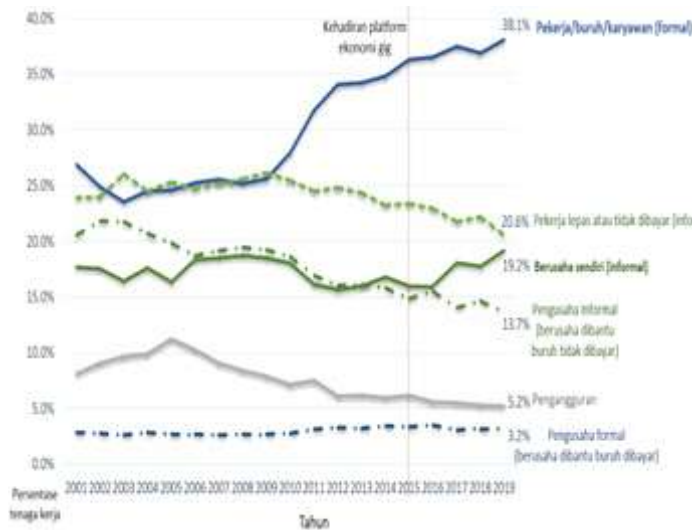
One of the main problems with studying the gig economy is the difficulty of estimating the working population (De Stefano, 2014). Platform companies are generally reluctant to share data on the number of employees with the public because it relates to matters of privacy, competition, and business model continuity. Even if the company is open about these numbers, it is not certain that the data can be relied upon in aggregate, considering the fact that many of the workers use more than one gig platform at the same time. Therefore, it is important for the government or a third party to conduct a special survey to estimate the number of gig workers at the city or country level. The government can carry out special surveys separately or in combination with routine labor surveys.

There were two method approaches carried out by this research. First, a literature study was conducted as a benchmark effort on how other countries have estimated the number of gig workers through various surveys. This study focused on estimating the gig economy in the United States, the European Union, and the United Kingdom. From the literature study, we learned some lessons that could serve as input for the Central Bureau of Statistics and independent survey institutions to estimate the number of gig economy workers in Indonesia in more detail. Second, empirically, a descriptive analysis was carried out using the National Labor Survey (Sakernas) micro data released by the Central Bureau of Statistics. Sakernas data, which is released twice a year, could not perfectly estimate the exact number of gig workers in Indonesia. However, despite its limitations, we could still obtain a rough estimate from it.

BPS (Central Bureau of Statistics) classifies workers into seven groups. Formal sector workers consist of workers/laborers (code 4) and those who run their businesses assisted by paid laborers (code 3).

The category of informal sector workers consists of individuals who are self-employed (code 1), who run their businesses assisted by unpaid labor (code 2), freelancers (codes 5 and 6), and unpaid family workers (code 7). The classification of formal and informal workers, according to BPS, is quite a dilemma. On the one hand, many workers/laborers (code 4) actually work without a contract, so they cannot be easily categorized as formal workers. On the other hand, there are also those who are self-employed (code 1) but have a legally registered taxable company, so they are no longer referred to as informal workers.

Figure 3 shows trends in Indonesia's workforce over the last 19 years, from 2001 to 2019 (before the Covid-19 pandemic). The participation of workers in the formal sector increased significantly to reach 51.7 million people in 2019, increasing in ratio from 27% in 2001 to 38.1% in 2019. In the meantime, employers in the formal sector increased slightly to 3.2% from 2.8% in the same period. Interestingly, although in aggregate the ratio of the informal sector decreased by almost 10%, there has been a significant increasing trend of those who are self-employed, especially since 2015. In 2019, the number of self-employed reached 26 million people, or 19% of the Indonesian workforce. This phenomenon could indicate the rise of the trend of the gig economy and penetration of the digital economy since 2015. In that year, apart from the rise of online motorcycle taxi platforms such as Gojek and Grab, there was also an increasing trend of e-commerce in which products were sold through intermediary applications such as Tokopedia, Shopee, and Bukalapak. This is supported by the fact that, in 2019, as many as 22% of those running their own businesses used the internet to do their work.



Explanation:
The emergence of gig economy platforms
38.1%=Workers/laborers/employees (formal)
20.6%=Freelancers or unpaid workers (informal)
19.2%=Self-employed (informal)
13.7%=Informal businesses (running businesses assisted by unpaid workers)
5.2%= unemployed
3.2%= Formal businesses (running businesses assisted by paid workers)

Figure 3.
Trends in the Indonesian Labor Force 2001–2019, processed by the author from BPS National Labor Force Survey (SAKERNAS) data every August

Results and Discussion

Estimating the Gig Economy Workforce: Lessons from Several Countries
Katz and Krueger (2019) modified a national employment survey to estimate the size of the gig workforce in the United States. The questions they asked were:

1. Do you sell goods or services directly to consumers at your job?
2. Does the transaction of goods or services use intermediary services?
3. Is the intermediary service online?

A worker is called a gig worker if the answer to the three questions is “yes.” Thus, an estimate of the number of gig workers was obtained, which was 0.5% of the entire workforce in the United States in 2015. Although relatively small, this figure is in line with Harris and Krueger's calculations (2015), which estimated the number of gig workers through various keywords in the Google search engine and calculations by Farrell et al. (2018), whose estimate was based on financial data from banks.

In 2017, the United States statistics agency estimated that the number of platform-based gig workers was 1% of the workforce through the Contingent Worker Supplement survey (Abraham and Houseman, 2020). This survey could differentiate online gig workers from location-based gig workers with the following two questions:

1. Some people carry out short-term work or tasks face-to-face through company intermediaries that connect consumers using websites or mobile applications. The company also manages payment for work services through an application or website. For example, using a vehicle to pick up passengers, deliver something, or do household chores. Does the job describe your work activity last week?
2. Some people carry out short-term jobs or assignments online through corporate intermediaries that connect consumers using websites or mobile applications. Their work is completely online, and the company helps manage payment for their work. For example, data input, translation services, or software development. Does the job describe your work activity last week?

The Pew Research Center (Smith, 2016) estimated that 8% of the adult population in the United States was engaged in gig economy activities using a simpler method of surveying through the question “Did you earn money from online platforms doing at least one of the following jobs last year?”

1. Online work such as surveys, data input, etc.
2. Driving a taxi online
3. Delivery of goods
4. Cleaning the house
5. Other jobs.

Meanwhile, the Joint Research Center at the European Commission estimates the number of gig workers in 14 European Union countries (Pesole et al., 2018) and differentiates online gig workers from location-based gig workers through the following two questions:

1. Providing services through an online platform where you and your client are brought together digitally, payments are made digitally, and the work is web-based and location independent.
2. Providing services through an online platform where you and your client are brought together digitally, payments are made digitally, but the work is done on location.

From these estimates, it was found that 11.9% of the adult population in the European Union had used platforms as a medium for work, with the highest percentage living in Portugal (15.7%) and the lowest living in Finland (6.9%). The report defines full-time gig workers as those who earn more than 50% of their income from the platform. Using these parameters, it was found that gig workers in the European Union make up 2% of the adult population.

The last example is the case of Great Britain. The UK government conducted a survey in collaboration with the research institute NatCen Panel which concluded that 4.4% of the UK's population worked in the gig economy during the last 12 months of 2017 (Lepanjuuri et al., 2018).

This figure is in sharp contrast to an independent survey conducted by the RSA, which estimated that the number of gig workers makes up 2.17% of the UK population (Balaram et al., 2017). Interestingly, the two surveys were able to identify in detail what types of work were carried out by workers. The RSA identified that the majority of gig workers did their activities for additional income, and only 8% of them worked full time as part of the gig economy.

In general, of course there will be many challenges regarding how to define gig economy workers. The first challenge is how to identify gig activities as a main job, a side job, or as non-work activity. The second is regarding the time parameters used when identifying gig activity. For example, can someone be called a gig worker if they have worked with a digitally mediated platform since last year, last month, or last week? In addition, the frequency of work also needs to be considered; for example, if an individual engages in gig work only once a year, can they be categorized as a gig worker? The differences in the definitions and limitations above can significantly affect gig worker estimates. The variance in estimates of gig workers in the United States, for example, can range from 0.5 to 8 percent, and in the European Union, the estimate ranges from 2 to 11 percent; these estimates depend on the limitations and definitions specified by each survey. Regardless of how gig workers are ultimately defined, regular measurements are still important when reading the changing labor market trends that will occur in Indonesia over the next few years.

In Indonesia itself, the World Bank (2021) has released a report on the profile of workers in the gig economy in Indonesia using data from the 2019 National Labor Force Survey (Sakernas). However, the definition used is different from the definition of the gig economy as consisting of workers in the service sector who use internet-based platforms.

This report categorizes all independent workers in all sectors as gig workers as long as a third party has control over the following:

- Organizing/coordinating main business/work (survey question 24b)
- Determining prices for goods or services for the main job (survey question 24c1)
- Controlling raw materials, machinery and equipment, or major work capital goods (survey question 24c2)

Size and characteristics of gig economy workers in Indonesia

In this study, gig workers are categorized as those who are self-employed in the service sector, following the definition that labor services are being traded, not products. Therefore, from the classification of 17 work sectors, gig workers can be categorized into some workers in the service sector, including code 8 (transportation and warehousing), code 10 (information and communication), code 11 (financial services and insurance), code 12 (real estate), code 13 (company services), code 15 (education services), code 16 (health services), and code 17 (other services).

Since 2018, Sakernas has included questions regarding internet use, namely whether workers use the internet in their main job, including whether it is used for communication, promotions, or transactions. In 2019, there were additional questions added regarding whether the process of selling goods/services is carried out through a marketplace website/application. Unfortunately, in 2020, the questions were removed. There are two approaches to defining gig workers. First, the parameters were limited to self-employed workers in the service sector who use the internet and whose goods/services are sold through a marketplace website/application. Although this approach clearly describes the characteristics of gig workers, there is a drawback regarding the ambiguity of the question. An online motorcycle taxi driver, for example, does not necessarily define the Gojek application he uses as a marketplace application. This first approach can produce numbers that are underestimated.

Using this approach, in 2019, it was estimated that there were 430,000 gig workers in Indonesia. There were 280,000 gig workers in the transportation sector who could be classified as online motorcycle taxi drivers, food deliverers, and courier services (example: Grab and Gojek). Meanwhile, there were 150,000 gig workers in other service sectors, including in this category; for example, there were software engineers who worked remotely using the gig application (example: Upwork), domestic workers who did housework using the gig application (example: Klik and Clean), or freelance teachers who taught through gig applications (example: Ruang Guru). Unfortunately, current BPS Sakernas data cannot differentiate location-based gig workers from gig workers who deliver their services online.

The second approach defines gig workers more generally. Using this approach, gig workers are all defined as self-employed workers in the service sector who utilize the internet medium in their work. This approach may better describe the many platform options in the gig economy ecosystem and result in less ambiguity in the survey questions. The drawback is that this definition also includes *ojek* (motorcycle taxi) drivers who use social media applications to reach consumers without going through platform intermediaries. However, it should also be understood that many gig workers do not use only digital platforms as intermediary companies; they also use the internet as a whole to find consumers, utilizing avenues such as Facebook groups, Twitter, WhatsApp, and other social media applications. Using this second approach can produce over-estimated numbers. This approach found that there were 2.3 million gig workers in Indonesia in 2019 with 1.2 million gig workers in the transportation sector and 1.1 million gig workers in other service sectors. The two approaches generally estimated that gig workers in Indonesia who did gigs as their main job numbered anywhere from 430,000 to 2.3 million people. In other words, 0.3 to 1.7% of the total workforce in Indonesia in 2019, which was 134 million people, consisted of gig workers (Figure 4).

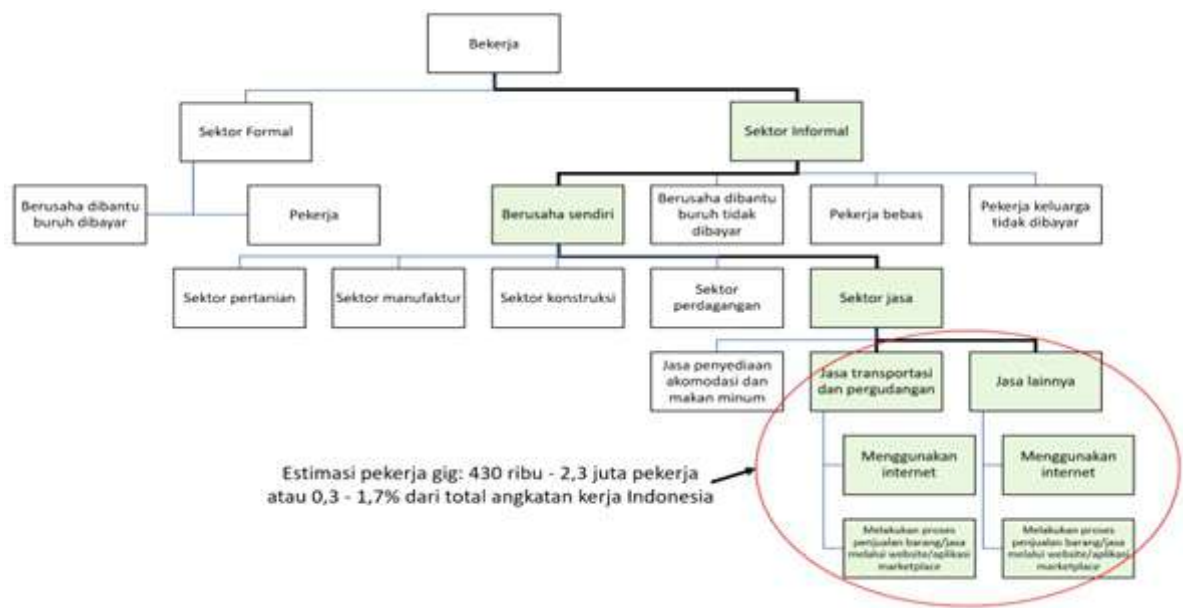


Figure 4
Identification of gig workers based on August 2019 BPS Sakernas data

Explanation: From top left to bottom right

- Employment, Formal sector, Informal sector
- Running a business assisted by workers, workers, Self-employed, Running a business assisted by unpaid workers, Freelancers, Unpaid family workers,
- Agricultural sector, Manufacturing sector, Construction sector, Service sector
- Accommodation, Food and drinks service providers, Transportation and warehousing services, Other services
- Using the internet, Using the internet
- Trading of products/services through website/marketplace application, Trading of products/services through website/marketplace application
- The estimated number of gig workers: 430,000 to 2.3 million workers, or 0.3–1.7% of the total of Indonesian workforce

The number is not much different from that of the estimated full-time gig workers in the United States, Europe, and the United Kingdom, which range from 0.5 to 2% of the workforce or of the adult population as described in the previous section.

BPS Sakernas data cannot yet determine the percentage of the total population that has participated in gig work. However, there are additional questions regarding additional work. Using the same approach, an estimated number of 140,000 to 900,000 people who did gigs as an additional job (0.1 to 0.7% of the workforce) was obtained. This figure is far less than that of gig workers who did gig activity as an additional job in the United States and Europe.

Based on this classification, we can also identify the characteristics of gig workers compared to workers in the formal sector and workers in the informal sector in general. Table 2 shows the comparison based on indicators of working hours, monthly income, gender, age, education level, and place of residence. In general, there are markedly significant differences between gig workers in the transportation sector and gig workers in other service sectors. Gig workers in the transportation sector have high working hours of up to 57 hours per week. This is in line with many previous studies, which describe the working conditions of online motorcycle taxi drivers and couriers who are forced to work late into the night to achieve daily targets and bonuses.

Meanwhile, the working hours of gig workers in other service sectors are 37 hours per week, relatively lower than workers in the formal and informal sectors.

In terms of average monthly income, workers in transportation gigs and other services earn far more than workers in the informal sector and are slightly better paid than formal workers. However, it should be noted that gig workers in the transport sector work significantly higher hours, so their actual hourly earnings are lower. The presence of a gig platform with an attractive income shows that the gig economy offers opportunities for those who were previously unemployed, worked in the informal sector, or those who worked in the formal sector but did not earn a decent wage.

Despite having the highest average income, the standard deviation of gig workers' income in the transportation sector is relatively low. This means that the distribution of income among transportation gig workers, for example among online motorcycle taxi drivers, is not significantly different. In contrast, the monthly income of gig workers in other service sectors has a high standard deviation. This means that there is a fairly unequal distribution among these workers. As an illustration, gig workers in the corporate service sector have an average income of 4.9 million IDR (Indonesian rupiah) per month, while in the education sector, it is only 2.3 million per month. This decomposition analysis explains that gig economy workers cannot be seen through a homogeneous lens. There are many differences among the various types of gig jobs, including the income.

Table 2
Comparison Of The Characteristics Of Gig Workers, Formal Sector Workers, And Informal Sector Workers (Derived From August 2019 BPS Sakernas Data)

	Gig Workers in the Transportation Sector	Gig Workers in Other Service Sectors	Formal Sector Workers in Sectors Other than Agriculture	Self-Employed (Informal Sector) in Sectors Other than Agriculture
Number of people	1.23 million	1.10 million	48.34 million	19.93 million
Proportion to the labor force	0.9%	0.8%	37.8%	15.6%
Proportion to the adult population	0.6%	0.5%	24%	10%
Working hours average	54 hours	37 hours	45 hours	44 hours
Proportion of university graduates	10.9%	23.8%	25.8%	6.0%
Monthly income average (IDR)	3.05 million	3.04 million	2.92 million	2.09 million
Age average	36 years	38 years	35 years	43 years
Female (%)	2.4%	36.4%	36.5%	45.9%
Live in urban areas (%)	88.1%	80.7%	73.0%	66.5%

As predicted, gig workers in the transportation sector are dominated by men (97.6%). Meanwhile, the gender ratio of gig workers in other service sectors is similar to that of formal workers, with a female participation rate of 36.4%. In addition, what distinguishes gig workers in the transportation sector is their level of education, which is dominated by high school graduates. Only 10.9% of them are university graduates, a rate lower than workers in the formal sectors (25.8%) but higher than workers in the informal sectors in general (6%).

On the other hand, in terms of education level, gig workers in other service sectors have characteristics that are more similar to those of formal workers, of whom 23.8% are university graduates. This could illustrate that there are some educated groups who prefer high-skill online gig jobs that offer higher income than those in the local job market because these jobs offer work autonomy and flexibility. Lastly, the average age of gig workers is lower than informal workers in general. This can be explained by the fact that gig workers must be technologically literate and able to use applications on mobile phones or computer devices, so it is only natural that these jobs are more in demand by workers at younger ages.

Geographic distribution of gig workers: agglomeration of cities and metropolitan areas

Table 2 shown above confirms that the gig economy is an urban phenomenon. As many as 88% of gig workers in the transportation sector and 80.7% of gig workers in other service sectors live in urban areas. In terms of living in urban areas, these figures are far greater than formal workers (73%) and informal workers (66%). The August National Labor Survey (Sakernas) by BPS allows us to break the employee profiles down to the regional level, covering 514 cities and regencies throughout Indonesia. It was found that the number of gig workers in each area is correlated strongly with the area's urban population (Figure 5). The gig economy phenomenon also shows the domination of Java Island and the nation's capital. As many as 1.7 million (74%) gig workers are located in Java Island.

Furthermore, 480,000 (39%) of gig workers in the transportation sector are concentrated in Jakarta's Metropolitan area (Jabodetabek).

To inspect the comparison of opportunities for participation in the gig economy in each region, we have to look at the statistics proportionally by comparing the number of gig workers relative to the population of each region. Table 3 and Table 4 show the 20 Cities/Regencies that have the highest number of gig workers in the transportation sector and in other service sectors per 100,000 of the adult population. In general, there is an enormous difference between gig workers in the transportation sector and those in other service sectors. In the transportation sector, most gig workers are concentrated in provincial capitals such as Manado, Bandar Lampung, and Surabaya, as well as in the Greater Jakarta area. This is in line with the size of the markets served by gig-based transportation services such as ridesharing, couriers, and food delivery. It should be noted that the gig economy in the transportation sector focuses on serving consumers at the local level.

In contrast, gig workers in other service sectors are distributed in second tier cities with smaller population such as Salatiga, Pasuruan, Madiun, and Solok. In addition, gig workers are also distributed in cities that are synonymous with cities of creativity, tourism, and education such as Denpasar, Malang, Yogyakarta, and Bandung. It should be noted that there are some gig workers in this group who work online and do not serve their local market. These cities are the top choice for these highly skilled, educated gig workers who are synonymous with creative workers and are more suited to living in creative cities.

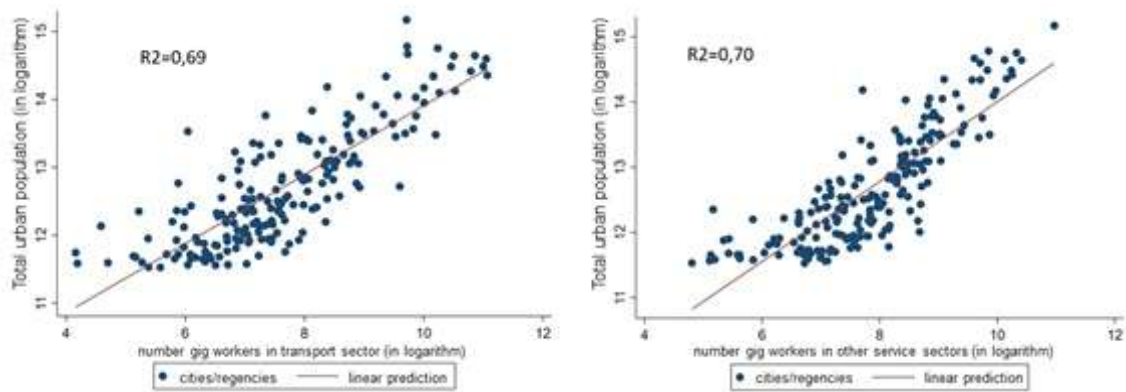


Figure 5

The correlation between the number of gig workers and the urban population of cities/regencies throughout Indonesia (the author compiled the information by using The August 2019 BPS Sakernas data and focuses on cities/regencies with a total urban population of more than 100,000 people)

Table 3.
Regions With the Most Gig Workers in The Transportation Sector

No	Province	City/Regency	Number of gig workers per 100,000 population
1	Sulawesi Utara	Manado	4403.461
2	DKI Jakarta	Jakarta Pusat	3764.228
3	DKI Jakarta	Jakarta Selatan	3729.075
4	DKI Jakarta	Jakarta Barat	3049.284
5	DKI Jakarta	Jakarta Timur	2871.709
6	DKI Jakarta	Jakarta Utara	2733.089
7	Jawa Barat	Depok	2660.492
8	Lampung	Bandar Lampung	2363.911
9	Jawa Barat	Bekasi (Kota)	2264.22
10	Bali	Denpasar	2212.664
11	Banten	Tangerang Selatan	2159.344
12	Sumatera Barat	Bukit Tinggi	2092.208
13	DI Yogyakarta	Yogyakarta	2040.898
14	DI Yogyakarta	Sleman	2020.023
15	Jawa Timur	Malang (Kota)	1979.355
16	Sulawesi Selatan	Makassar	1936.634
17	Jawa Barat	Bandung (Kota)	1784.001
18	Sumatera Barat	Padang Panjang	1604.123
19	Jawa Timur	Surabaya	1596.157
20	Jawa Barat	Bogor (Kota)	1557.069

Table 4.
Regions With The Most Gig Workers In Other Service Sectors (Non-Transportation)

No	Provinsi	Kota/Kabupaten	Number of gig workers per 100,000 population
1	Bali	Denpasar	2654.181
2	Jawa Timur	Malang (Kota)	2310.83
3	Di Yogyakarta	Yogyakarta	1931.794
4	Di Yogyakarta	Sleman	1778.938
5	Kalimantan Timur	Balikpapan	1713.479
6	Kepulauan Riau	Tanjung Pinang	1590.396
7	Jawa Barat	Depok	1558.285
8	Banten	Tangerang Selatan	1553.709
9	Jawa Tengah	Salatiga	1546.78
10	Dki Jakarta	Jakarta Selatan	1501.303
11	Jawa Tengah	Semarang (Kota)	1499.273
12	Jawa Barat	Bogor (Kota)	1488.646
13	Sumatera Barat	Solok (Kota)	1465.274
14	Jawa Timur	Surabaya	1455.868
15	Jawa Barat	Bandung (Kota)	1432.476
16	Sulawesi Tengah	Palu	1430.481
17	Jawa Timur	Pasuruan (Kota)	1394.088
18	Jawa Timur	Madiun (Kota)	1362.908
19	Jawa Barat	Bogor (Kabupaten)	1361.728
20	Jawa Timur	Mojokerto (Kota)	1209.330

Conclusion

The presence of platform-based companies that function as mediators to match users and employers has become an interesting phenomenon in Indonesia over the past few years. The term “gig economy” is becoming increasingly popular as challenges and opportunities emerge from the presence of new types of jobs mediated by these digital platforms. Most of the previous studies focused on issues that occur in the gig economy related to the relationship between workers and companies, especially ones that related to collective action and agency of workers. Unfortunately, no one has yet provided a complete picture of the gig economy ecosystem in Indonesia. This study is the first to define the two typologies and map the gig economy platform providers in Indonesia based on these typologies.

This study is also the first to estimate the size, the characteristics, and the distribution of gig economy workers in Indonesia based on the August 2019 BPS National Labor Force Survey (Sakernas). The BPS Sakernas is not perfect, but it can provide a rough picture of the number of gig workers in the transportation sector and in the other service sectors. Gig workers in the transportation sector represent the ridesharing contractors, couriers, and food deliverers (e.g., Gojek and Grab platforms). Gig workers in other service sectors consist of application-mediated online teachers (e.g., Ruang Guru) and online gig workers such as software developers, translators, copy writers, and other jobs where works are delivered remotely (e.g., Upwork and Fastwork). This study found that there are about 430,000 to 2.3 million people among Indonesia's workforce who perform gig work as their main job. In other words, about 0.3 to 1.7% of the total workforce in Indonesia works full time as part of the gig economy.

This ratio is similar to the ratio of full-time gig workers in the United States, Europe, and the United Kingdom. This study also managed to identify the characteristics of gig workers in terms of working hours, incomes, and demographic backgrounds and then compare them with the characteristics of formal workers and informal workers in general. In general, gig workers in the transportation sector have long working hours (54 hours) compared to other workers, are dominated by men (97.6%) and high school graduates (60%), and live in urban areas (88.1%). Meanwhile, gig workers in other service sectors have shorter working hours (37 hours) if they are compared to the other worker types and have similar demographic characteristics to workers in the formal non-agricultural sectors, with 23.8% of them being university graduates and 36.4% of them being female (Fastwork).

This study also mapped the distribution of gig workers at the City/Regency level. Gig workers in Java Island account for 74% of all gig workers in Indonesia. This ratio is higher than the ratio of Java Island's population itself, which is only 60%. In addition, it was found that gig workers in the transportation sector are concentrated in metropolitan cities. On the other hand, gig workers in other service sectors are more concentrated in other tier-two cities on Java Island.

The findings of this study confirm previous studies about the gig economy phenomenon at the global level, which are (1) the gig economy is an urban phenomenon, (2) some gig workers have longer working hours than workers in general, and (3) the field is dominated by men.

It is important to measure the number of workers who participate in the gig economy individually without involving platform provider companies. First, the data from platform provider companies does not include workers who utilize more than one platform simultaneously. Second, the gig workers' data that are integrated with the full workforce survey will be useful in analyses comparing gig workers to workers or to the workforce as a whole.

The question regarding the use of the internet by workers that started at Sakernas in 2018 is an advancement that can help us estimate the penetration of the digital economy in Indonesia. There are several improvements that can be made by the government, especially by the BPS as the agency responsible for employment surveys, so that the number of gig workers can be better estimated. First, the question regarding the use of intermediary applications/platforms that mediate workers and users should be clarified. This question can reference several types of questions in labor force surveys done in the United States (Abraham and Houseman, 2020; Katz and Krueger, 2019), the European Union (Pesole et al., 2018), or the United Kingdom (Balaram et al., 2017; Lepanjuuri et al., 2018) which have been discussed previously. Second, the survey needs questions that can clearly differentiate location-based gig workers from online gig workers. Third, the survey needs questions about respondents' engagement with the gig platform even if the respondents do not classify this activity as their main job. With these questions, we would be able to estimate the rate of how much of the population have been involved in the gig economy in Indonesia.

Follow-up studies in the future can combine the 2019 Sakernas with the 2021 Sakernas to see how the Covid-19 pandemic has affected gig economy workers in Indonesia. In addition, Sakernas micro data can also identify the respondents' previous jobs and why they left their previous jobs. By utilizing these questions, we can study a person's motivation in becoming a part of the gig economy workforce.

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