Work Flexibility, Income Uncertainty, and Gig Workers' Welfare in DKI Jakarta

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Abstract

The growth of the gig economy in DKI Jakarta provides work flexibility but increases income uncertainty, which adversely affects workers' well-being. This study is important to fill the gap in studies on the relationship between work flexibility, income uncertainty, and well-being in the context of developing cities. Utilizing a quantitative methodology, this study implements cross-sectional regression analysis, clustering techniques, spatial mapping, and Structural Equation Modeling (SEM) based on the Sakernas of August 2024 data. This study explores the effects of working hours, geographic location, and demographic factors on gig workers' income. The results show income inequality between regions, gender inequality, and a positive relationship between working hours and income, although uncertainty remains high. The findings suggest that work flexibility can reduce income uncertainty and improve well-being. The principal contribution of this study resides in the synthesis of spatial and structural methodologies for analyzing the well-being of gig workers. This research presents an innovative framework for comprehending the dynamics of the gig economy within developing urban areas and provides data-informed recommendations for the formulation of more inclusive social protection and income stability measures policies.

Keywords: Gig Workers, Income Uncertainty, Work Flexibility, Well-Being.
JEL Classification: J31, J81.

INTRODUCTION

The gig economy has emerged as a significant trend within the contemporary workforce, especially in Indonesia, where DKI Jakarta functions as a prominent hub (Arafat et al., 2025; Aruni & Izzaka, 2025). As the use of digital platforms for flexible work increases, gig workers, such as online motorcycle taxi drivers, delivery drivers, and other project-based workers, are increasingly playing an essential role in the regional economy (Banik & Padalkar, 2021). The flexibility of gig work, such as the freedom to determine when and where to work, provides advantages in terms of time management and life balance (Warren, 2021). However, behind the flexibility of gig work, a major problem is often overlooked, namely the income uncertainty experienced by gig workers (Pratomo et al., 2024). Income uncertainty arises as a result of workers' dependence on variability in

market demand, uncertain working hours, as well as unstable types of work (McCrate et al., 2019).

Previous research has extensively discussed the benefits of work flexibility in the gig economy, such as increased personal freedom, control over time, and the opportunity to work in more varied locations (Hickson, 2024). However, there has been insufficient focus on the adverse effects of gig worker flexibility, specifically the income instability that can influence workers' financial and emotional health. For instance, although time flexibility enables workers to choose their hours, the resulting income variations can cause financial stress that directly affects the psychological well-being of gig workers (Simonse et al., 2022). Financial anxiety due to fluctuations in gig workers' income is an important issue in Jakarta, considering the high dependence on gig jobs amid fierce competition for stable jobs.

The significance of this matter escalates when one contemplates the long-term implications of income uncertainty on the social and economic welfare of gig workers. Those without a guaranteed fixed income, frequently experiencing job fluctuations, may face financial stress and economic worries, which can ultimately impede their contributions to inclusive economic growth (Win & Mohamad, 2022). Although several studies have identified factors that affect the income of gig workers, there has been no study that has comprehensively examined the relationship between work flexibility and income uncertainty, as well as its impact on the quality of life of gig workers, especially in Jakarta.

This study aims to address the existing research gap by thoroughly examining the influence of flexible work arrangements on the income uncertainty and welfare of gig workers in DKI Jakarta. This study is novel in its comprehensive approach, integrating diverse quantitative methods such as regression analysis, SEM, and spatial mapping to explore the intricate relationship between work flexibility, income uncertainty, and gig workers' well-being. The study also highlights how external factors and geographic location can affect the experience of income uncertainty for gig workers in urban environments such as DKI Jakarta. This study's results aim to offer new insights for policymakers to create effective strategies that enhance income stability for gig workers, thereby fostering more sustainable and inclusive economic growth in Jakarta. Thus, this research not only enriches the literature related to the gig economy but also makes practical contributions that can be implemented in public policy.

THEORETICAL FRAMEWORK

Gig Economy and Work Flexibility

Over the past decade, the gig economy has experienced significant growth, resulting in substantial transformations within both global and national labor market structures. In Indonesia, especially in big cities such as DKI Jakarta, the emergence of digital platforms such as Gojek, Grab, ShopeeFood, and Tokopedia supports the proliferation of gig-based work, where individuals offer their services to clients through online applications, without a fixed employment relationship (Darmastuti et al., 2024). This phenomenon is rooted in the dynamics of technological change, globalization, and the shift in preferences of the younger generation who prioritise work flexibility over long-term stability (Lee et al., 2024; Retnowati et al., 2024). The gig economy removes traditional boundaries between workers and employers,

creating looser, project-based working relationships, which offer opportunities but also create vulnerabilities.

Work flexibility, an essential characteristic of the gig economy, enables individuals to determine the timing, location, and manner in which they engage in work (Wang & Xie, 2023). Flexibility allows workers to tailor their work schedules to personal needs, increase control over time, and provide opportunities to balance work life with personal life (Chung & van der Lippe, 2018). Miller & Giblin (2023) stated that having flexibility in work hours is linked to higher job satisfaction and psychological well-being, particularly for employees with family obligations. However, the concept of flexibility is also paradoxical. Research conducted by Duggan et al. (2023) pointing out that while gig workers appear to have freedom in choosing jobs and schedules, in practice, they remain tightly controlled by the platform's algorithm that determines the availability of tasks and search priorities.

Criticism of the concept of flexibility in the gig economy comes from the perspective of industrial relations. Pratomo et al. (2024) stating that too high flexibility without a legal protection framework tends to lead to exploitation, where gig workers are forced to accept business risks that are supposed to be borne by employers. Within Jakarta, the adaptability provided by the gig economy holds significant importance due to rapid urbanization, traffic jams, and the unpredictability of traditional employment opportunities. For many individuals, especially those from the lower middle class, jobs on digital platforms offer more accessible opportunities than looking for formal jobs in the increasingly competitive formal sector (Gaspareniene et al., 2021). However, with the high cost of living, work flexibility without stable income support has become a new source of economic and psychological pressure.

Income Uncertainty in the Gig Economy

Income uncertainty is one of the main consequences of the demand-based structure of the gig economy. As stated by Mousavi & Gigerenzer (2014), Uncertainty occurs when individuals are unable to estimate the economic outcomes of individual actions, in contrast to risks whose probabilities can be calculated. According to Zwettler et al. (2023), Gig workers face not only fluctuations in weekly or monthly income, but also uncertainty in getting access to work in the future. Without a long-term contract, gig workers are vulnerable to losing access to the platform or experiencing a sudden reduction in work volume without compensation. Uncertainty does not only have an impact on financial aspects. Study by Kurian & Madhavi (2024) suggests that gig workers with high income uncertainty are more likely to experience stress, anxiety, depression, and an overall reduced quality of life. Income uncertainty also forces gig workers to extend work hours, take night shifts, or take on other additional jobs leading to chronic burnout (Vu & Nguyen, 2024).

More so, income uncertainty magnifies social disparities as gig workers are less likely to be able to access traditional financial products such as bank loans or pension programs, which exacerbates the socio-economic exclusion of workers (Allchin, 2024). Without the support of social protection systems, gig workers are often trapped in a state of multidimensional vulnerability, in the form of unstable incomes, limited access to healthcare, and the risk of losing their jobs at any time. Thus, to understand income uncertainty in the gig economy requires a comprehensive approach that considers financial, social, and psychological aspects,

as income uncertainty not only reduces financial well-being, but also creates existential uncertainty for gig workers, exacerbating overall life insecurity.

Gig Worker Welfare and Its Impact on Quality of Life

Gig worker well-being should be understood as a multidimensional concept that includes economic (income and financial security), social (relationships and social support), and psychological (emotional and cognitive well-being). In the gig economy, income stability and access to social protection are key factors that determine the well-being of workers (Sankararaman et al., 2024). Social protection serves as a buffer against income uncertainty and economic shocks, allowing workers to focus more on their quality of life.

However, most gig workers, especially in developing countries like Indonesia, do not have access to these protections. Study by Indra & Nawangsari (2025) notes that only a small percentage of gig workers in Indonesia have formal social security. The absence of health insurance, pensions, or unemployment protection makes gig workers particularly vulnerable to a health crisis or sudden loss of income. Social welfare is also a challenge in the gig economy. Due to the flexible and individualistic nature of work, many gig workers experience social isolation, which negatively impacts the mental health of the workers (Singh et al., 2024; S. Wang et al., 2022). So indeed, the welfare of gig workers is greatly influenced by a combination of economic, social, and health factors. Adopting a holistic perspective on these factors is imperative for devising effective policy interventions that improve the quality of life for gig workers in Jakarta and comparable major cities.

METHOD

This study utilizes a quantitative, cross-sectional design to investigate the relationship between work flexibility, income uncertainty, and welfare among gig workers in DKI Jakarta. This methodology was selected to understand the variations in gig workers' earnings at a specific moment and to assess how work flexibility and income instability affect their well-being. The analysis utilizes secondary data sourced from the August 2024 Sakernas, which encompasses various aspects of gig workers in Jakarta, including working hours, job locations, types of work, income, and additional factors such as education level, work experience, and household size members.

In this study, gig workers consist of three main categories that reflect the diversity of sectors and the nature of the work undertaken by gig workers. First, service workers and salespeople. Workers in the service and sales force categories are vulnerable to income uncertainty affected by fluctuations in market demand and changing economic conditions (Chen et al., 2024). Second, processing, handicrafts, and YBDI workers. Many freelancers are involved in the handicraft sector or project-based product processing (Henry et al., 2021). Income uncertainty in the processing, handicrafts, and YBDI worker groups is strongly influenced by seasonal demand variability and reliance on specific technical skills possessed by each worker. Third, manual labor. Workers in the manual labor category face high uncertainty regarding project duration, policy changes, and volatile market conditions, which can lead to significant fluctuations in income (Haan et al., 2021).

To explore income patterns among gig workers, cross-tabulation-based clustering analysis was performed by grouping workers based on income and other

related variables (L. Wang et al., 2024). The cross-tabulation-based clustering approach allowed this study to identify groups of workers with similar characteristics under several conditions and provide deeper insights into income uncertainty in the gig worker sector. Cross-tabulation-based clustering is a relatively simple but effective method of addressing income variability in a diverse population of gig workers (de Toledo et al., 2018). Then, spatial mapping was used to explore how geographic location affected income uncertainty.

Spatial mapping was used in this study to identify and explore how geographic location can affect income uncertainty among gig workers in DKI Jakarta. By mapping the average income in each region, the mapping provides a clear visual picture of economic inequality between regions, as well as helping to identify areas that face greater income uncertainty. Previous studies have also shown that geographic location has an impact on income uncertainty, especially for workers who are more reliant on accessible employment opportunities in areas with high economic concentrations (Wheatley, 2020).

To identify the factors that affect income uncertainty among gig workers in DKI Jakarta, this study uses cross-sectional regression analysis with three different regression models, namely the overall data regression model, the data regression model for men, and the data regression model for women. The selection of separate regression models by gender aimed to understand whether there is a difference in the influence of variables on income uncertainty between men and women. This study separates the analysis by gender to highlight the differing experiences of male and female workers in confronting income challenges uncertainty. This study uses several main variables for regression analysis, as shown in Table 1.

Table 1. Operational Definition of Variables in Regression Analysis

Variable	Definition
Income	The amount of income gigs received in the past month.
Working_Hours	The hours a worker logged in the last week, measured in units of hours.
Contract_Time	The duration of the employment contract owned by a gig worker and measured in months.
JobLoss_Insurance	An indicator of whether gig workers have insurance that protects them in the event of job loss. A value of 1 if have insurance, and 0 if don't.
Education	The last level of education completed by a gig worker, measured in categories.
Union_Membership	An indicator of whether gig workers are members of a union. Values of 1 if incorporated, and 0 if not incorporated.
Unsafe_Work	An indicator of whether gig workers work in conditions that are at high risk of accidents or health problems. A value of 1 if not safe, and 0 if safe.
Marriage_Stat	Gig worker marital status, categorized as 1 for married and 0 for unmarried.
Training	An indicator of whether gig workers have taken training or courses relevant to their job. Score 1 if you follow the training, and 0 if you don't.

Source: Processed by researcher, 2025.

The variables in Table 1 are then analyzed in the regression model with the following equation:

$$Income_i = \beta_0 + \beta_1 \text{Working\_Hours}_i + \beta_2 \text{Contract\_Time}_i + \beta_3 \text{JobLoss\_Insurance}_i + \beta_4 \text{Education}_i + \beta_5 \text{Union\_Membership}_i + \beta_6 \text{Unsafe\_Work}_i + \beta_7 \text{Marriage\_Stat}_i + \beta_8 \text{Training}_i$$

This study's variable selection is informed by significant insights from earlier research that pinpoint the primary factors influencing gig income uncertainty for workers. Working hours, as one of the main variables, show a direct relationship with income, where the more hours worked, the higher the potential income earned (Tan et al., 2023; Yusuf et al., 2018). On the other hand, the duration of the contract has a significant impact on revenue uncertainty. Workers with short-term contracts are more vulnerable to income instability than workers with more extended contracts that offer guaranteed stability over a period of time (Alrousan et al., 2025; Horne & Soares, 2022).

In addition, job loss insurance serves as an essential financial protector. Workers who have job loss insurance tend to be more insured if they lose their jobs, which can reduce income uncertainty, which is often a big challenge for gig workers (I. A. Putri et al., 2024; Suparto, 2023). Education and training were chosen as variables because they were both shown to improve workers' skills and open up more opportunities to get a more stable job with a higher income, which in turn could reduce income uncertainty (Shiri et al., 2023; Aiuby & Hayati, 2023).

Trade union membership was a crucial factor in the study, given that workers who belong to a trade union generally benefit from improved protection against income fluctuations (Eisenberg-Guyot et al., 2020). Unions often provide legal protections and guarantee more stable wages, which helps reduce the uncertainty workers face in the workplace (J. Clemens & Strain, 2025; Ha et al., 2024). The existence of additional work was also a variable of concern in this study, as many workers chose additional work to increase income, to help reduce uncertainty by increasing total income (Pouliakas & Pouliakas, 2023). Finally, unsafe working conditions are an external factor that can exacerbate income uncertainty. Workers who are exposed to environments at high risk of accidents or health problems tend to experience greater fluctuations in income, as the risks arising from unsafe working conditions can interfere with the worker's ability to work stably (Belloni et al., 2022; Nunes et al., 2023).

In order to investigate the direct and indirect relationships among work flexibility, income uncertainty, and the well-being of gig workers, this study utilized the Structural Equation Model (SEM). SEM is a multivariate statistical technique integrating various analytical methods, including factor analysis, structural modelling, and path analysis. (Hair Jr et al., 2021). SEM allows this study to test a more complex and simultaneous relationship between multiple latent and measurable variables, which cannot be solved with ordinary linear regression analysis. SEM provides an advantage in exploring the intricate relationship between work flexibility, income uncertainty, and well-being. In the SEM model in this study, the variables used as indicators are displayed in Table 2.

Table 2. Operational Definition of Variables in SEM Analysis

Variable	Indicator	Definition
Work Flexibility	JobLoss_Insurance	An indicator of whether gig workers have insurance that protects them in the event of job loss. A value of 1 if have insurance, and 0 if don't.
Income Uncertainty	Contract_Time	The duration of the employment contract owned by a gig worker and measured in months.
	Union_Membership	An indicator of whether gig workers are members of a union. Values of 1 if incorporated, and 0 if not incorporated.
Welfare	Retirement_Insurance	Pension insurance, which shows social protection for gig workers, provides a guarantee of a safer future after retirement. Values 1 if have, and 0 if don't have.
	Health_Insurance	Health insurance that reflects the level of social protection that gig workers have in dealing with health risks and improving the quality of life of workers. Values 1 if have, and 0 if don't have.
	Accident_Coverage	Insurance coverage against accidents that allows gig workers to protect themselves from potential loss of income due to work accidents. Values 1 if have, and 0 if don't have.

Source: Processed by researchers, 2025.

The indicators used in SEM analysis play a crucial role in describing more complex latent variables, such as work flexibility, income uncertainty, and well-being in the context of gig workers. Job flexibility is measured by the job loss insurance indicator, which describes the level of worker protection against job uncertainty. Gig workers who have job loss insurance tend to have more flexibility in dealing with the risk of losing their job, as workers are protected by insurance that provides temporary income guarantees (Suparto, 2023). The existence of job loss insurance not only reduces uncertainty, but also allows workers to more freely choose jobs or manage work hours without worrying about the risk of losing income in the short term. Correspondingly, the duration of employment contracts and union membership is also used as an indicator of income uncertainty. The duration of employment contracts reflects long-term income stability for gig workers, with workers with long-term contracts likely to experience fewer income fluctuations than workers with short-term contracts (Asai & Koustas, 2023). Union membership provides additional protection related to income fluctuations and provides better

legal support for gig workers, who often face job uncertainty (Schnabel, 2020; Hagedorn et al., 2016).

On the other hand, well-being is measured by indicators that focus on social protection, such as pension insurance, health insurance, and accident protection. Retirement insurance provides financial security for gig workers after retirement, which reduces the uncertainty of future income and provides a sense of financial security (Hernæs et al., 2024; Rodrigo & Kim, 2023). Health insurance is essential for improving workers' quality of life, given that gig workers often do not have access to adequate health insurance, which can lead to unexpected medical expenses and damage the financial stability of workers (Reshmi & Mulla, 2023). Finally, accident protection insurance shows a level of protection against the risk of accidents that can occur in gig work, which can damage the financial stability of workers if not protected with adequate insurance (International Labour Organization, 2021). These three indicators provide a more comprehensive picture of how well gig workers are socially protected, which affects their well-being. By utilising the indicators of the SEM model, this research can examine a more intricate connection between social protection, income uncertainty, and the quality of life of gig workers.

The models employed within this Structural Equation Modeling (SEM) framework encompass both structural models and measurement models. Structural models illuminate the interrelationships among latent variables, whereas measurement models clarify the connections between latent variables and their corresponding indicators. Estimation is conducted employing the maximum likelihood estimation (MLE) method. The mathematical equations that articulate the relationship between latent variables and indicators are as follows:

Measurement Model:

$$X_l = \lambda_{X1} \cdot X + \varepsilon_{X1} \qquad Z_l = \lambda_{Z1} \cdot Z + \varepsilon_{Z_1} \qquad Z_3 = \lambda_{Z3} \cdot Z + \varepsilon_{Z_3}$$
$$Y_l = \lambda_{Y1} \cdot Y + \varepsilon_{Y_1} \qquad Z_2 = \lambda_{Z2} \cdot Z + \varepsilon_{Z_2}$$
$$Y_2 = \lambda_{Y2} \cdot Y + \varepsilon_{Y_2}$$

Where X, Y, Z are latent variables that represent work flexibility, income uncertainty, and well-being, respectively. λ is the coefficient of the loading factor, illustrating the connection between the indicator and the latent variable and ε is the term error or residual error for each indicator. Furthermore, there exist structural models that are notated as follows:

Structural Model:

$$Y = \beta_1 \cdot X \cdot \varepsilon_Y$$
$$z = \beta_2 \cdot X + \beta_3 \cdot Y + \varepsilon_z$$

Where β_1 is a coefficient that measures the effect of work flexibility (X) on income uncertainty (Y). β_2 is the coefficient that measures the effect of work flexibility (X) on welfare (Z). β_3 is the coefficient that measures the effect of income uncertainty (Y) on well-being (Z). ε_Y and ε_Y are the error terms for income and welfare uncertainty variables. Using SEM, this study examined the direct relationship between work flexibility and well-being and the indirect relationship involving income uncertainty as a mediator between the two variables. Subsequent

to the successful construction of the SEM model, a path analysis was conducted to delineate the cause-and-effect relationship between the latent variables and their corresponding indicators. The pathway analysis provides a clear picture of how work flexibility affects the income and well-being uncertainty of gig workers and how income uncertainty affects the well-being of gig workers. The methodology used in this study has been designed to provide a comprehensive approach in exploring the relationship between work flexibility, income uncertainty, and the welfare of gig workers in DKI Jakarta.

RESULTS AND DISCUSSION

The average income of gig workers at the regional level of DKI Jakarta shows a fascinating picture of economic inequality between regions, with South Jakarta occupying the highest position with an average income of IDR 4,410,442, while the Thousand Islands is at the bottom with IDR 2,761,664, as shown in Figure 1. As a center of economic activity, South Jakarta has more and more stable job opportunities, especially in sectors that have higher added value, such as technology, finance, and creative sectors (Syaban & Appiah-Opoku, 2023). South Jakarta also has better infrastructure and easier access to economic centers, which allows gig workers to earn higher incomes (Yunita et al., 2021). These findings suggest that gig workers in regions with more developed economies and better infrastructure have the potential to earn higher incomes, but are also at higher risk of income uncertainty associated with more dynamic market fluctuations.

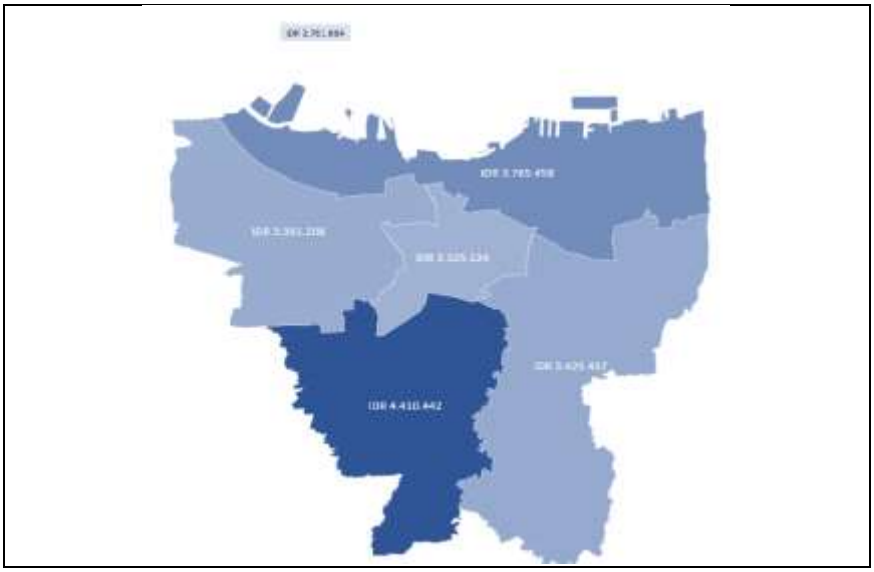

Figure 1. Average Distribution of Gig Worker Income in the DKI Jakarta Region
Source: Processed by researchers, 2025.

On the other hand, the Thousand Islands, with a lower average income of IDR 2,761,664, illustrates the challenges gig workers face in regions with more limited economies. As an area further away from the main economic centers in Jakarta, the Thousand Islands have more limited access to stable gig job opportunities as well as low demand for jobs related to productive and high-income sectors. The existence of limited infrastructure in the Thousand Islands, compared to other areas in DKI Jakarta Province, has also worsened the labor market

conditions in the Thousand Islands, which makes it more difficult for gig workers to get better income (International Bank for Reconstruction and Development, 2017).

Data on the income distribution of gig workers in DKI Jakarta, as shown in Table 3, shows that 6.63% of male workers and 23.85% of female workers in the gig economy have an income below the poverty line set in DKI Jakarta, which is IDR 825,288/capita/month as of March 2024 (BPS-Statistics DKI Jakarta Province, 2024b). The higher proportion of female workers with incomes below the poverty line reflects significant economic inequality in the gig sector, where female workers are more likely to be trapped in vulnerable and unstable economic conditions (Andlib & Zafar, 2023). The existing conditions are further exacerbated by the inability of gig workers to access adequate social security, which further increases their vulnerability to economic hardship (Syabani et al., 2024).

Table 3. Gender Distribution in Gig Worker Income in DKI Jakarta

Income	Male Worker	Female Worker
IDR0-IDR890,000	6.63%	23.85%
IDR890,000-IDR5,000,000	68.73%	62.94%
>IDR5,000,000	24.46%	13.21%

Source: Processed by researchers, 2025.

The data on the income distribution of gig workers in DKI Jakarta displayed in Table 3 also shows that most gig workers in DKI Jakarta, both men and women, earn between IDR 890,000 to IDR 5,400,000, which is still below the DKI Jakarta minimum wage, which is IDR 5,067,381 in 2024 (BPS-Statistics DKI Jakarta Province, 2024a). In addition, gender inequality also becomes more evident when the data in Table 1 reveals that 24.46% of male workers earn more than IDR 5,000,000, while only 13.21% of female workers achieve the same income level. The existing inequalities cannot be separated from the role of gender in the gig sector, where women are more often involved in industries with lower income and higher uncertainty (Syafitri et al., 2023). World Economic Forum (2023) reveals that female workers often do not have equal access to more stable and higher-paying job opportunities than men, exacerbating the income gap between the two genders.

Table 4. Distribution of Working Hours in Gig Worker Income in DKI Jakarta

Income	0-20 Hours per Week	20-40 Hours per Week	>41 Hours per Week
IDR0-IDR890,000	51.57%	20.20%	5.11%
IDR890,000-IDR5,000,000	40.50%	65.16%	71.05%
>IDR5,000,000	7.93%	14.64%	23.84%

Source: Processed by researchers, 2025.

The data regarding the distribution of working hours and income among gig workers in DKI Jakarta, as presented in Table 4, indicates a distinct correlation between the number of hours worked and the income earned. These findings are consistent with many previous studies that suggest that the more hours worked, the higher the potential income workers receive (Green & Heywood, 2023; M. Clemens & Sauermann, 2025). This observation holds particular significance within the

context of the gig economy, where the flexibility of working hours is a principal characteristic. Data indicates that gig workers who have the capacity to extend their working hours are likely to achieve higher income levels, thereby highlighting the potential benefits associated with longer work durations (Bick et al., 2024).

However, although the positive correlation between hours worked and income is quite evident, the data presented in Table 4 also indicate that several gig workers opt to work fewer hours. Reduced hours are not always chosen voluntarily, but are often the result of limited access to job opportunities or an inability to obtain more job opportunities (Alauddin et al., 2025). Gig workers in areas with limited infrastructure or a poorly developed job market are often unable to secure additional work or more hours, which ultimately limits income. European Trade Union Institute (2017) revealed that one of the major challenges faced by gig workers is the limitations of getting enough or commensurate work, which often leads to workers working fewer hours than they would like.

The regression estimation results shown in Table 5 reveal that working hours significantly impact the income of gig workers in DKI Jakarta, both in the aggregated data and when separated by gender. These findings align with previous research indicating that a rise in hours worked by gig workers is linked to a proportional increase in their income (Beckmannshagen & Schröder, 2022). Workers who work longer can access more job opportunities, and in the gig sector, length of work is often an important indicator of increased income. However, although a significant positive relationship exists between hours worked and income, it is paramount to acknowledge that income fluctuations persist as a concern, considering the highly dependent nature of gig work on unpredictable market demand (Pande, 2024; Ardho & Sudrajad, 2023). Workers who work longer in low-demand sectors may not experience a substantial increase in income, suggesting that length of work is not the only determinant of income stability in the gig sector (International Labour Organization, 2018).

Education also significantly influences the income of gig workers in DKI Jakarta, with workers with higher levels of education tending to earn higher incomes. Nevertheless, a distinction exists in the influence of education on male and female workers. The effect of education on the income of male workers surpasses that of their female counterparts. These disparities can be elucidated by the differences in access to higher-paying and more stable employment opportunities for men and women, with men demonstrating a higher likelihood of securing positions that require advanced skills and offer superior remuneration (Pető & Reizer, 2021; Schneider et al., 2022). Research shows that higher education can indeed open up access to more stable and well-paying jobs, which in turn can reduce income uncertainty, but this is more true for men, given the gender norms that still dominate in many job sectors (Bonnie et al., 2015).

Table 5. Regression Estimation Results

VARIABLES	(1) All	(2) Male	(3) Female
Working_Hours	58,334*** (0)	36,964*** (0.000655)	59,319*** (0)
Education	674,889*** (0)	958,838*** (0)	276,593*** (0.00289)
Contract_Time	108,281 (0.554)	52,676 (0.832)	87,254 (0.735)
Union_Membership	-843,268*** (0.00536)	-1.331e+06*** (0.000554)	-729,752 (0.159)
JobLoss_Insurance	30,462 (0.922)	-124,919 (0.751)	295,079 (0.579)
Marriage_Stat	878,878*** (0.000630)	1.889e+06*** (1.34e-06)	-663,619** (0.0390)
Training	-496,144* (0.0779)	-802,863** (0.0485)	-434,056 (0.228)
Unsafe_Work		-	-591064.8 (0.926)
Constant	249,982 (0.734)	1.524e+06 (0.178)	1.214e+06 (0.183)
Observations	3,768	2,083	1,685
R-squared	0.056	0.082	0.048

pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Diolah oleh peneliti, 2025.

The regression analysis results indicated that the duration of the contract exerted no significant influence on the income of gig workers in DKI Jakarta. These findings underscore the flexible and project-based nature of the gig sector, where workers are not tied to long-term contracts (Zelma, 2024). In line with the literature that states that the gig sector often relies on temporary contracts or short-term agreements, which allow workers to choose jobs based on demand and availability (Tabassam, 2024). The gig sector, which includes freelance or project-based work, tends to be more dynamic and flexible, where contract duration is not always a determining factor in income stability. The variable regarding the duration of the contract appears to be less significant in elucidating the variations in the income of gig workers, which is predominantly influenced by other factors.

In contrast, union membership showed significant results with negative coefficients for the entire sample of workers and a sample of male workers, but not for women. The differences in significance highlight the critical role of unions in protecting male workers' earnings from greater fluctuations than women's. Previous research has shown that union membership can provide better worker rights protections, including more stable wage agreements and protection against income uncertainty (Rubery & Johnson, 2019). However, the impact of trade unions on women workers is more limited. Women in the gig sector are often involved in

poorly organised sectors, where the existence of unions is weaker and women's access to the benefits provided by unions is more limited (Artz & Heywood, 2020). The existing conditions illustrate the importance of improving women's representation in workers' organizations so that women workers can get equal benefits from male workers.

In this study, job loss insurance did not significantly impact the income of gig workers in DKI Jakarta. These findings may suggest that while job loss insurance can protect against income uncertainty, its impact on gig workers' earnings is likely to be limited. Gig workers often do not have adequate access to adequate job loss insurance, and despite the guarantee of protection, workers still face higher income uncertainty due to fluctuations in the number of jobs available (Styawati et al., 2024; Lasatu et al., 2024).

Marital status has a significant effect on the income of gig workers in DKI Jakarta, with a more substantial positive influence on men and a negative influence on women. The findings reflect a greater motivation for male workers to increase their earning capacity to meet the increased household needs after marriage (Sihombing, 2022). On the other hand, for women, marital status is related to lower income. The greater burden of domestic responsibility on women can explain the negative influence of marriage on women's income. In many cases, women who are married and have children tend to have limitations in time and the ability to engage in more lucrative gig jobs, as they have to divide their time between work and family responsibilities (Shakya, 2022). The findings indicate that gender inequality exists in the division of roles within households, which adversely affects women's participation in the labor market, particularly in the gig sector (Chuanchuan & Jingwen, 2021; Cerrato & Cifre, 2018).

The training negatively influenced the overall income of gig workers, with significant results across the sample and stronger in male workers. The decline in income after training can be explained by the mismatch between the skills taught in the training and the highly dynamic market needs (Fleckensteina et al., 2024). As the nature of the gig sector changes rapidly, the skills required often differ from what is taught in formal training, so gig workers who attend training do not even benefit directly from the training (Ejiwale, 2019). These findings underscore the challenges of providing relevant and appropriate training to the needs of gig workers who often operate in highly diverse and fast-changing sectors.

Unsafe working conditions did not significantly affect the overall data for women and were omitted from the analysis of male workers. Women workers frequently engage in occupations that are susceptible to insecurity, both physically and psychologically, due to the higher likelihood of their employment in less organized sectors or positions with diminished protections (Pratomo et al., 2023). Although the results of the analysis indicate that insecure working conditions do not exert a significant effect on income uncertainty, it is essential to recognize that female workers in the gig sector frequently encounter an increased exposure to the risk of precarious employment (T. E. Putri et al., 2023). These findings highlight the need for improved job protections, especially for women in the gig sector, to reduce income uncertainty experienced by female workers.

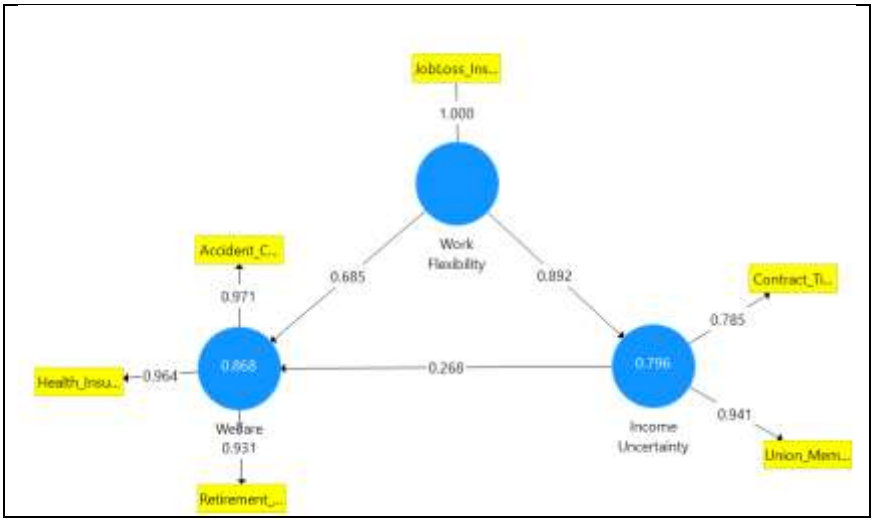

Figure 2. Model in SEM Analysis
Source: Processed by researchers, 2025.

In the SEM analysis conducted in Figure 2, the outer value of the model shows an excellent relationship between the indicator and the latent variable measured. All indicators have a loading factor value above 0.7, which signifies a strong convergent validity for the construction formation of each latent variable (Tafarel & Ginting, 2025; Selwendri et al., 2024). Subsequently, the findings of the reliability measurements for the variables within the Structural Equation Modeling (SEM) framework exhibited excellent values, as evidenced by all Cronbach's Alpha, rho_A, and Composite Reliability (CR) metrics exceeding the thresholds commonly accepted in social and economic research, as delineated in Table 5. All variables displayed Cronbach's Alpha values surpassing 0.7, thereby indicating a markedly strong level of consistency in the measurement of the indicators (Taber, 2017; Cheung et al., 2023). A composite reliability value that is also greater than 0.7 confirms the existence of consistent internal reliability between variables (Traymbak et al., 2022; Suhandi & Gularso, 2024). Overall, the test results showed that the measurement models for all three variables were valid and reliable, providing a solid basis for further structural analysis.

Table 5. Reliability and Validity of Constructs

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Income Uncertainty	0,703	0,872	0,857	0,751
Welfare	0,953	0,960	0,969	0,914
Work Flexibility	1,000	1,000	1,000	1,000

Source: Processed by researchers, 2025.

In the analysis of the total effects listed in Table 6, the relationship between income uncertainty and the welfare of gig workers in DKI Jakarta showed a coefficient of 0.268, which means that income uncertainty has a direct influence on welfare, although the impact is not too large. These findings suggest that while income uncertainty contributes to a decline in workers' well-being, other factors

such as access to social protection, family support, and job stability can mitigate the negative impact that exists. Previous research has shown that workers who have access to social protection, such as health insurance or pensions, tend to be better able to manage income uncertainty and maintain their quality of life despite income fluctuations (Mathers & Slater, 2014). So while income uncertainty affects well-being, complementary factors such as social protection play an important role in mitigating these impacts.

However, the impact of income uncertainty on well-being remains important to consider. Uncertainty in income often causes anxiety and stress for workers, which risks damaging their mental and physical health in the long run (Peters et al., 2017; Thomson et al., 2022). Gig workers, who have no guaranteed fixed income, are more vulnerable to economic pressure than workers with more stable employment status (Hafeez et al., 2022). So that the management of income uncertainty is the key to improving the quality of life of gig workers, including through better social protection policies. On the other hand, work flexibility shows a much greater influence on worker welfare, with a higher total effect compared to income uncertainty. Work flexibility gives gig workers the opportunity to tailor their working hours to personal needs and daily life, which contributes to reduced stress and improved work-life balance. Research by Ray & Pana-Cryan (2021) suggests that work flexibility can reduce the level of stress experienced by workers, as workers have more control over time, which allows workers to allocate time for breaks, family, and other personal activities. This has positive implications for overall well-being, as workers who are more satisfied with work-life balance tend to be more productive and have better mental health (Hasan et al., 2020).

Table 6. Total Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Income Uncertainty -> Welfare	0,268	0,268	0,022	11,899	0,000
Work Flexibility -> Income Uncertainty	0,892	0,892	0,004	224,156	0,000
Work Flexibility -> Welfare	0,924	0,924	0,003	298,027	0,000

Source: Processed by researchers, 2025.

The indirect effect value of 0.239 in the Work Flexibility → Income Uncertainty → Welfare pathway, recorded in Table 8, indicates the critical role of work flexibility in influencing the welfare of gig workers through reducing income uncertainty. Gig workers who have greater flexibility in managing work hours and choosing the type of work have the potential to reduce the uncertainty associated with their income. Flexibility gives workers more control over work schedules, which then allows workers to tailor work to each worker's needs and economic circumstances (Yildizhan et al., 2023; Boccoli et al., 2024). In the context of

dynamic and often erratic gig work, control over work allows workers to better plan for income, which in turn reduces financial stress that can impact quality of life (Berrill et al., 2020).

Table 7. Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Work Flexibility -> Income Uncertainty -> Welfare	0,239	0,239	0,019	12,432	0,000

Source: Processed by researchers, 2025.

Gig workers who can manage their hours and types of work more flexibly tend to feel more financially secure, reducing the anxiety that arises from income uncertainty. Flexibility that can reduce anxiety is essential in a gig sector that is often marked by fluctuations in work and income. The stress posed by income uncertainty can lead to severe mental and physical health problems, potentially reducing the overall quality of life. Reducing income uncertainty through work flexibility can help gig workers achieve a healthier work-life balance by reducing worries that could disrupt productivity. These findings are in line with findings from Erhel et al. (2024), which reveals that workers who are more flexible in their work tend to have a better work-life balance and lower stress levels.

In addition, the indirect influence of work flexibility on worker welfare through income uncertainty also suggests that the gig sector can improve workers' quality of life more sustainably. By mitigating income uncertainty, employees achieve financial stability and experience mental and physical health enhancements, which are crucial for sustained well-being. Work flexibility is not only a matter of comfort in managing time but also an essential aspect of creating a work environment that supports the welfare of gig workers. Gig workers who feel more financially secure tend to have a higher quality of life, contributing to overall productivity and job satisfaction.

CONCLUSION

This study shows significant economic inequality among gig workers in DKI Jakarta, with apparent income variations between regions, especially between South Jakarta and the Thousand Islands. The South Jakarta area has the highest average income of gig workers, while the Thousand Islands recorded the lowest income, reflecting differences in market access and job opportunities. In addition, gender inequality is evident, where more female workers earn below the poverty line compared to men, showing significant gaps in the gig sector. While a relationship exists between hours worked and income, workers with limited hours experience greater income uncertainty, often attributed to restricted access to employment opportunities. Furthermore, female workers are particularly susceptible to hazardous working conditions, which further compounds the uncertainty surrounding their income and overall quality of life.

These findings suggest that policies for gig workers focus more on efforts to reduce existing inequalities, especially gender inequality, which significantly

affects the income and welfare of women workers. Increasing women's access to more stable and secure gig jobs should be a priority, with relevant skills training support to unlock higher-paying job opportunities. On the other hand, better social protection policies, including adequate job loss insurance and social security, should be introduced to reduce income uncertainty in the gig sector. The government is also advised to improve infrastructure and job market access in more isolated areas, such as the Thousand Islands, to create more equitable opportunities for all gig workers in DKI Jakarta. Subsequent research is anticipated to concentrate on the elements that influence the income uncertainty and overall well-being of gig workers by considering variables such as governmental policies and fluctuations within the labor market.

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