
Flexibility or Precarity: Unveiling Women's Labor Market Outcomes in Indonesia's Gig Economy

Axellina Muara Setyanti^{1*}, M. Afif Khoiruddin²

¹Graduate School, Universitas Brawijaya

²Faculty of Economics and Business, Universitas Brawijaya

*Correspondence: axellinamuara@ub.ac.id

Abstract

In Indonesia, the gig economy has emerged as a symbol of flexibility in work, yet such flexibility often entails hidden precarities, especially for women. This paper explores gender disparities in two vital labor market outcomes: the likelihood of earning adequate wages and the distribution of working hours. Drawing on 13,085 individual-level observations from the 2024 National Labor Force Survey (SAKERNAS), we apply logistic regression to model wage adequacy and multinomial logit analysis to distinguish between underemployment, adequate employment, and long working hours. The results reveal a consistent gender gap. Women are significantly less likely to obtain adequate wages, even after accounting for age, education, marital status, and job characteristics. Age shows a non-linear pattern, with positive returns in mid-career before declining, while education strongly enhances wage adequacy. Training participation does not significantly improve wage outcomes, and multi-job holding is negatively associated with wage adequacy, suggesting that multiple jobs function more as a coping mechanism than a pathway to better earnings. In terms of working hours, women are disproportionately represented in underemployment, reflecting limited access to sufficient and stable work. Conversely, men are more likely to be overworked, often exceeding the 48-hour threshold. Education again serves as a protective factor, lowering the risk of both underemployment and overwork. Taken together, these findings demonstrate that women's participation in the gig economy is shaped more by precarity than by genuine flexibility, manifested through wage penalties and unstable working hours. Policy efforts should therefore focus on reducing gender disparities by strengthening labor protections, ensuring minimum wage compliance, and expanding access to portable social security and skill upgrading.

Keywords: gender disparity, gig economy, wage adequacy, working hours

1. Introduction

The rapid expansion of Indonesia's gig economy in recent years has transformed the country's labor market landscape, offering new modes of flexible work through digital platforms such as online ride-hailing, e-commerce, and freelance services. Permana et al. (2025) projected that gig workers, utilizing Sakernas statistics from 2019, numbered 2.33 million, constituting 1.7 percent of Indonesia's overall workforce, primarily in the transportation and other service industries. Moreover, El Hajal & Rowson (2021) and Mehta (2023) indicated that the population of gig workers is anticipated to rise in

accordance with the swift advancement of technology and artificial intelligence. This trend has been driven by technological advances, the rise of mobile internet access, and changing employment preferences among youth and women seeking flexibility. However, despite its promise of autonomy and innovation, the gig economy has also raised concerns about low job security, unstable income, and inadequate social protection (Samsudin et al., 2024; Uchiyama et al., 2022).

In Indonesia and other economies, women have been among the most active participants in gig work, attracted by its flexible hours that enable them to balance income generation with domestic responsibilities (Dokuka et al., 2022; Hunt et al., 2019; Kasliwal, 2020). Yet, this same flexibility can translate into vulnerability. Women gig workers often experience lower earnings, irregular working hours, and limited access to formal contracts and social insurance compared to men (Ghosh et al., 2021). These inequalities mirror the broader gendered segmentation of Indonesia's labor market, where women's labor participation remains lower and wage gaps persist across sectors (Allen, 2016; Setyonaluri et al., 2021; Sohn, 2015; Susilo et al., 2024). The coexistence of "flexibility" and "precarity" thus becomes a central paradox in understanding the gendered dimensions of gig employment.

Empirical research across nations increasingly demonstrates that the expansion of the gig economy has not necessarily increased inclusion, but has instead exacerbated existing labor market division. According to Rodriguez-Illesma et al. (2021), the gig economy is a concentrated form of employment de-standardization, resulting in a variety of insecure jobs marked by a lack of choice, disempowerment, low pay, and worsened working conditions, particularly among young individuals. This calls into question celebratory narratives about the flexibility of gig labor. Mendonça & Kougiannou (2025) show how different groups of food delivery workers develop different power-building strategies based on nationality, work dependence, and legal status, demonstrating that inclusion and exclusion dynamics are inextricably linked to workers' ability to collectively act. Hu & Fu (2021) investigate the evolutionary dynamics of gig labor techniques, focusing on how technology, policy, and market forces cause oscillating patterns between gig and traditional employment. McKenzie (2024) broadens this approach to include academic research involvement, claiming that digital platforms have expedited the "gigification" of research activity through labor fragmentation. Such findings imply that the promise of flexibility in gig labor may mask structural vulnerabilities, especially for workers who lack bargaining strength and institutional protection.

The theoretical foundation of this study draws from the *flexibility–precarity framework* (Kalleberg, 2018), which conceptualizes labor market flexibility as a double-edged phenomenon: while it allows employers to adjust production costs and workers to manage time, it simultaneously increases employment insecurity and income volatility. Within this context, gender becomes a key analytical lens. Feminist labor theories emphasize that women often experience "*flexibility without autonomy*", where the capacity to choose working hours coexists with low earnings, unpaid care burdens, and limited social protection (Rubery, 2015; ILO, 2021). This dynamic is particularly salient in emerging economies like Indonesia, where labor market dualism persists between formal and informal sectors. The gig economy, while technologically innovative, tends to replicate these asymmetries by positioning women in low-paid, unstable, or supplementary roles.

Despite the growing body of literature, empirical studies on gig employment in Indonesia remain fragmented and descriptive, relying primarily on platform-specific or small-scale surveys. Quantitative analyses using representative labor market data, especially those that examine *gender-based disparities* in key outcomes such as wages and working hours, are notably scarce. The absence of such evidence limits the capacity of policymakers to assess whether gig work functions as a pathway toward decent work or merely extends the informal economy under digital guise. Addressing this gap, the present study utilizes the National Labor Force Survey (Sakernas), to generate a national-level empirical assessment of Indonesia's gig economy.

Specifically, this study aims to analyze the gendered determinants of two interrelated labor market outcomes, wage adequacy and working hours, which jointly reflect workers' economic well-being and job quality. Employing logistic regression for wage adequacy and multinomial logit modeling for working-hour categories (underemployment, adequate hours, and overwork), this research integrates individual characteristics such as education, training participation, and multiple job holding. By situating the empirical analysis within the flexibility–precarity framework, this study seeks to quantify the extent to which Indonesia's gig economy provides flexibility or reinforces precarity, thereby contributing to academic debates and policy discussions on achieving gender-equitable and sustainable forms of digital labor.

2. Research method

2.1. Data Source and Scope

This study uses microdata from the August 2024 National Labor Force Survey (Sakernas) conducted by Statistics Indonesia (Badan Pusat Statistik - BPS). Sakernas provides comprehensive and nationally representative information on labor force characteristics, including employment type, working hours, income, education, and training. The dataset applies a multi-stage stratified sampling design that ensures representativeness across provinces and between urban and rural areas. The analytical sample consists of 13,085 working-age individuals (15–64 years) who were employed during the reference week and provided complete information on income and working hours. To align with the concept of gig employment, the analysis focuses on workers classified as *own-account* and *casual* laborers in both agricultural and non-agricultural sectors, also using internet in current job, which reflect flexible and non-standard employment arrangements characteristic of Indonesia's growing gig economy.

2.2. Variable Construction

Two primary labor market outcomes are examined to capture the dual dimensions of flexibility and precarity in gig work: wage adequacy and working hours. Wage adequacy is a binary variable that takes the value of one if a worker's reported monthly income equals or exceeds the provincial minimum wage (*Upah Minimum Provinsi* - UMP) and zero otherwise. This indicator reflects an individual's ability to earn a decent wage consistent with Indonesia's labor standards. Working hours are classified into three categories according to ILO standards: underemployed (fewer than 35 hours per week), adequately employed (35–48 hours per week), and overworked (more than 48 hours per week).

Independent variables include gender, age, age squared (to capture non-linear life-cycle effects), marital status, schooling (years of education), training participation, and multiple job holding. These covariates represent both human capital and structural aspects influencing job quality. Control variables such as urban–rural location and province dummies are included to account for spatial and institutional differences in local labor markets. Together, these variables provide a multidimensional view of how individual characteristics shape labor outcomes within Indonesia’s gig economy. The variable construction of the study provided in Table 1.

Table 1. Research Variables’ Operational Definition

Variable	Definition/Measurement	Data Type
Dependent Variables		
Wage Adequacy	1 = monthly income $\geq$ provincial minimum wage; 0 = otherwise	Binary
Working Hours Category	0 = Underemployed (<35 hours/week); 1 = Adequate (35–48 hours/week); 2 = Overworked (>48 hours/week)	Categorical (Multinomial)
Independent Variables		
Gender	1 = Female; 0 = Male	Binary
Age	Age of worker (years)	Continuous
Age ²	Age squared to capture non-linear life-cycle effect	Continuous
Marital status	1 = Married; 0 = Otherwise	Binary
Education	Years of completed formal education	Continuous
Training participation	1 = Attended training; 0 = Otherwise	Binary
Multiple Job Holding	1 = Has more than one job; 0 = Single job	Binary

Source: SUSENAS 2024 (Processed)

2.3. Model Specification

The empirical strategy in this study employs two complementary econometric models to capture the determinants of labor market outcomes representing both income adequacy and working-hour flexibility. The first model applies a binary logistic regression to estimate the probability of a worker earning an adequate wage, while the second utilizes a multinomial logistic regression to analyze the likelihood of workers being underemployed, adequately employed, or overworked. These models are selected because the dependent variables are discrete, and they allow estimation of marginal effects of individual and job characteristics on the probability of belonging to each outcome category.

2.3.1. Logit Regression for Wage Adequacy

The first model estimates the probability that an individual i earns an adequate wage, defined as income equal to or above the provincial minimum wage. The logistic regression model is appropriate because the dependent variable is binary ($WAGE_i = 1$ if adequate, 0 otherwise). The functional form is expressed as:

$$P_i = \frac{\exp(X_i' \beta)}{1 + \exp(X_i' \beta)} \quad (1)$$

which can be rewritten in log-odds form as:

$$\ln \left(\frac{P_i}{1 - P_i} \right) = X_i' \beta + \varepsilon_i \quad (2)$$

where P_i denotes the probability of earning an adequate wage, X_i represents a vector of explanatory variables, β is the vector of coefficients, and ε_i is the error term. The explanatory variables include individual and employment characteristics such as gender, age, marital status, education, training participation, and multiple job holding, which together capture both demographic and human-capital dimensions influencing income outcomes. The logit framework is appropriate for modeling binary dependent variables and allows interpretation of coefficients in terms of odds ratios, representing the likelihood of achieving wage adequacy relative to the base condition.

2.3.2. Multinomial Logit for Working Hours Category

The second model analyzes the determinants of working-hour patterns across three unordered categories: underemployed (fewer than 35 hours/week), adequately employed (35–48 hours/week), and overworked (more than 48 hours/week). Since the dependent variable consists of more than two unordered outcomes, a multinomial logit (MNL) model is employed. The underemployment category ($Y_i = 0$) is treated as the base or reference group.

Formally, the probability that an individual i belongs to working-hour category j is expressed as:

$$P(Y_i = j) = \frac{\exp(X_i' \beta_j)}{\sum_{k=0}^2 \exp(X_i' \beta_k)} \text{ for } j = 0, 1, 2 \quad (3)$$

where $Y_i = 0$ is *underemployed* (reference), $Y_i = 1$ is *adequate employment*, and $Y_i = 2$ is *overwork*. The corresponding log-odds equations relative to the base category are:

(4)

$$\ln\left(\frac{P(Y_i = 1)}{P(Y_i = 0)}\right) = X_i'\beta_1, \quad \ln\left(\frac{P(Y_i = 2)}{P(Y_i = 0)}\right) = X_i'\beta_2$$

The explanatory variables (X_i) include gender, age, age squared, marital status, schooling, training participation, and multiple job holding. Positive coefficients indicate that higher values of these variables increase the likelihood of being adequately employed or overworked rather than underemployed.

3. Results and Discussion

3.1. Descriptive Statistics

The descriptive statistics in Table 2 provide an overview of the structural characteristics of Indonesia's gig workforce and reveal several important patterns related to flexibility and precarity. The majority of workers remain in positions that do not provide adequate wages, suggesting that the promise of flexible employment has not translated into broad-based economic security. Patterns of working time indicate polarization rather than balance: a substantial share of workers either experience insufficient hours or engage in excessive work beyond standard thresholds. This duality reflects the unequal distribution of flexibility within the gig economy, where some workers face involuntary part-time work while others compensate for income inadequacy through longer working hours.

Table 2. Descriptive Statistics of Observations

Variables	Frequency (n)	Percentage (%)
Wage adequacy		
Adequate	4,530	34.62
Not adequate	8,555	65.38
Working hours		
Underemployed	4,987	38.11
Sufficient	3,672	28.06
Overworked	4,426	33.82
Gender		
Male	6,428	49.12
Female	6,657	50.88
Marital status		
Married	9,837	75.18
Otherwise	3,248	24.82
Education		

Variables	Frequency (n)	Percentage (%)
Not graduated from elementary school	352	2.69
Elementary school	1,625	12.42
Junior high school	2,400	18.34
Senior high school	6,595	50.40
Diploma I/II/III	499	3.81
Diploma IV/Bachelor degree	1,557	11.90
Master degree	57	0.44
Training experience		
Yes	4,299	32.85
No	8,786	67.15
Multi-job holding		
Yes	1,587	12.13
No	11,498	87.87
Variable	Mean	Std. Deviasi
Age	38.90	11.02

Source: SUSENAS 2024 (Processed)

The gender distribution in the sample is relatively balanced, enabling the identification of gender-based disparities in employment outcomes. Most workers are married and in their mid-career stage, implying that family and household responsibilities may interact with labor participation decisions, particularly for women who often seek flexible arrangements to reconcile paid and unpaid work. Education levels are concentrated at the secondary level, with only a limited proportion having access to tertiary education or skill-oriented training, indicating potential constraints in upward mobility and productivity improvement.

A relatively small share of workers report participation in job-related training, and few engage in multiple job holding. These patterns suggest that opportunities for skill enhancement and income diversification remain limited, reinforcing structural vulnerability within the labor market. Overall, the descriptive profile highlights that Indonesia's gig workers operate in an environment marked by wage insecurity, uneven working time, and constrained opportunities for advancement, conditions that collectively illustrate the persistent tension between flexibility and precarity that this study seeks to analyze further.

3.2. Logit Estimation Result: Wage Adequacy

The logit estimation results presented in Table 3 identify the main determinants of earning a wage equal to or above the provincial minimum standard among workers in Indonesia's gig economy. The model is statistically significant overall (LR $\chi^2 = 1512.52$; $p < 0.01$) and accounts for meaningful variation in wage adequacy across individuals, suggesting that demographic and human-capital factors play substantial roles in shaping income outcomes within flexible labor markets.

Table 3. Logit Result for the Estimation of Wage Adequacy

Wage Adequacy	Coefficient	Odds Ratio	z	Prob z
Gender (base category: female)	-1.252***	0.285	-31.28	0.000
Age	0.132***	1.141	10.59	0.000
Age square	-0.001***	0.998	-8.94	0.000
Marital status	0.119**	1.126	2.37	0.018
Education	0.071***	1.074	10.54	0.000
Training	0.017	1.018	0.41	0.685
Multi-job holding	-0.296***	0.743	-4.91	0.000
Constant	-3.917***	0.019	-15.41	0.000
Observations	13,085			
LR chi2	1512.52			
Prob > chi2	0.0000			

Notes: p-value in parathenses; ***, **, * denote 1%, 5%, and 10% level of significance respectively

Source: *SUSENAS 2024 (Processed)*

Gender emerges as the most significant determinant of wage adequacy. With male workers serving as the reference group, the negative and highly significant coefficient for females ($\beta = -1.252$, OR = 0.285, $p < 0.01$) indicates that women's odds of earning an adequate wage are only about 28 percent of men's, holding other variables constant. This finding underscores the persistence of gender pay inequality even within non-standard and flexible employment arrangements, where task-based remuneration was initially expected to minimize traditional forms of discrimination. In reality, women continue to face structural disadvantages in accessing high-paying or stable gig opportunities, reflecting the same gendered hierarchies that shape the conventional labor market. Research shows that the gig economy is marked by pronounced gender segregation, with men dominating transport and logistics platforms while women are concentrated in care-related and service-oriented roles (Churchill & Craig, 2019).

The discourse of “flexibility” often masks this imbalance, as women are more likely to be pushed into precarious forms of work that accommodate unpaid domestic responsibilities but offer limited income stability or advancement (Vyas, 2021). Algorithmic bias on digital platforms can further entrench these inequalities, amplifying gender-based differences in task allocation and performance ratings. Although women frequently report that gig work “fits with their schedule” more than men, this pattern reflects constraints arising from household and caregiving obligations rather than genuine autonomy. As a result, men tend to convert flexibility into higher earnings, whereas women’s flexibility remains tied to necessity. Nonetheless, some evidence suggests that in higher-skill or STEM-related crowd work, gender wage gaps may narrow when controlling for skill levels, even though women remain substantially underrepresented in these domains (Petroff & Fierro, 2023).

The coefficients on age and its squared term exhibit a non-linear pattern consistent with the human capital life-cycle hypothesis, indicating that the probability of achieving wage adequacy increases with age as workers accumulate experience, skills, and job stability, but eventually declines as these advantages plateau or diminish in later career stages. This pattern aligns with the findings of von Wachter (2020), who emphasizes that earnings trajectories typically follow an inverted-U shape, reflecting the combined effects of skill accumulation, productivity growth, and eventual depreciation of human capital over time. Marital status also shows a positive and significant association with wage adequacy, suggesting that married workers are more likely to earn sufficient wages compared to their unmarried counterparts. This relationship may reflect stronger household responsibilities and greater attachment to the labor market, which in turn can enhance workers’ motivation and stability from an employer’s perspective.

Economic theory further explains that marriage can improve labor outcomes through mechanisms of household search and income pooling, whereby dual-earner households share risks and resources more efficiently, allowing individuals to pursue more stable and better-paying employment (Pilossoph & Wee, 2021). Beyond income dynamics, marital status has also been linked to women’s economic empowerment, as marriage may provide social and financial support that facilitates greater participation in the labor market and enhances bargaining power within households (Mengstie, 2022). Taken together, these insights suggest that marital stability and shared household responsibilities can reinforce labor market attachment and improve wage outcomes, particularly among women balancing both economic and domestic roles.

Education exerts a strong and consistent positive influence on wage adequacy, reinforcing the central role of human capital in shaping income outcomes (Hao et al., 2023; Moyo et al., 2022). Each additional year of schooling increases the likelihood of earning an adequate wage by approximately seven percent ($p < 0.01$), underscoring education’s enduring function as a key driver of labor productivity and earnings potential. This result aligns with classical human capital theory, which posits that education enhances cognitive skills, problem-solving capacity, and adaptability, attributes that increase workers’ value in both formal and informal labor markets. In the context of the gig economy, where formal contracts and career ladders are often absent, education serves as one of the few stable predictors of economic returns, offering individuals greater access to diverse and better-paying opportunities, particularly in digital and service-oriented sectors.

By contrast, participation in job-related training shows no statistically significant effect on wage adequacy, suggesting a potential mismatch between training content and market demand. Many available training programs remain supply-driven, focusing on general or outdated skills rather than the technological and entrepreneurial competencies required for success in platform-based or freelance work. This finding shows evidence from other developing economies, where short-term vocational programs often fail to translate into measurable income gains due to limited relevance, weak certification systems, or lack of employer linkage (McKenzie, 2021). Consequently, while formal education appears to equip workers with foundational advantages that persist across work arrangements, the current model of vocational and on-the-job training may require substantial redesign to address the evolving skill demands of Indonesia's increasingly digital and flexible labor market.

Finally, multiple job holding is negatively associated with wage adequacy ($\beta = -0.296$, OR = 0.743, $p < 0.01$). Workers who hold more than one job are less likely to reach the minimum wage threshold, highlighting that multi-job arrangements function more as a coping mechanism to supplement inadequate income rather than a signal of higher productivity or success (Smith & McBride, 2021). Taken together, these results illustrate that while flexibility characterizes Indonesia's gig economy, it does not guarantee equitable or adequate pay. Instead, gender-based inequality, educational attainment, and employment structure remain decisive factors shaping who benefits from this evolving labor landscape. The findings lend empirical support to the argument that without institutional safeguards or inclusive human-capital policies, flexibility risks reinforcing existing social hierarchies rather than expanding opportunity.

3.3. Multinomial Logit Estimation Result: Working Hours

The multinomial logit estimation examines how individual and job-related characteristics shape workers' placement across three working-hour categories: underemployed (fewer than 35 hours per week), adequately employed (35–48 hours per week), and overworked (more than 48 hours per week). The model treats underemployment (0) as the base outcome, thereby estimating the relative likelihood of achieving adequate or excessive working hours compared to being underemployed. The overall model in Table 4 is highly significant (LR $\chi^2 = 801.82$; $p < 0.01$), indicating that these factors jointly explain considerable variation in time-related labor outcomes among Indonesia's gig workers.

Table 4. Multinomial Logit Result for the Estimation of Sufficient Working Hours

Dependent Variable: Working Hour	Outcome 1: Underemployed	Outcome 2: Adequate	Outcome 3: Overworked
Gender		-0.898***	-0.868***
(base category: female)	Base outcome	(0.000)	(0.000)
Age		0.077***	0.112***
	Base outcome	(0.000)	(0.000)
Age square		-0.0008***	-0.001***
	Base outcome	(0.000)	(0.000)

Dependent Variable: Working Hour	Outcome 1: Underemployed	Outcome 2: Adequate	Outcome 3: Overworked
Education	Base outcome	-0.022*** (0.003)	-0.021*** (0.003)
Training	Base outcome	-0.117** (0.018)	-0.234*** (0.000)
Multi-job holding	Base outcome	-0.190*** (0.004)	-0.634*** (0.000)
Constant	Base outcome	-1.070*** (0.000)	-1.428*** (0.000)

Notes: p-value in parathenses; ***, **, * denote 1%, 5%, and 10% level of significance respectively

Source: SUSENAS 2024 (Processed)

Gender differences are once again pronounced and statistically significant. Female workers are substantially less likely to transition out of underemployment into either adequate or overworked categories ($\beta = -0.899$ and -0.868 , $p < 0.01$, respectively). This confirms that women remain concentrated in shorter-hour or more fragmented employment arrangements, possibly due to caregiving responsibilities or gender segmentation in gig work tasks (Ishizuka & Musick, 2021; Smith & McBride, 2021). The persistence of time-related underemployment among women suggests that flexibility in gig work often manifests as reduced work intensity rather than genuine empowerment, reinforcing rather than alleviating economic vulnerability. Although flexible work arrangements are frequently promoted as enabling women to balance paid and unpaid responsibilities, the evidence indicates that this flexibility is not a freely chosen preference. Women's participation in the gig economy tends to be concentrated in low-hour, low-paying, or task-based jobs that provide limited opportunities for skill development or upward mobility. As a result, the supposed advantages of flexibility are offset by reduced access to stable income, social protection, and bargaining power.

Age and its squared term exhibit the expected non-linear pattern, indicating that the probability of working adequate or longer hours increases with age but at a diminishing rate. Mid-career workers are therefore more likely to achieve stable employment hours, while both younger and older individuals face a higher likelihood of underemployment. This relationship reflects experience-based labor market sorting, where accumulated skills and job tenure enhance employment stability up to a certain point before tapering off as workers approach later stages of their careers. Empirical evidence supports this pattern: younger workers often face entry barriers and job mismatch, leading to high rates of involuntary part-time employment. For instance, Meyer & Mncayi (2021) find that graduates aged 20–29 experience significantly higher underemployment compared to those in their early thirties, particularly among minority groups. In contrast, older workers frequently encounter underemployment through different mechanisms, including declining health, employer bias, and limited retraining opportunities. As Lee & Kang (2024) note, this group often transitions into “hidden workers” who

oscillate between underemployment, discouragement, and early labor force withdrawal, underscoring the multifaceted nature of time-related vulnerability across the life cycle.

Education consistently shows a negative and significant association with both adequate and overwork categories ($p < 0.01$), indicating that higher educational attainment reduces the likelihood of time-related underemployment and excessive work. This suggests that more educated workers are better positioned in skill-based or formalized gig arrangements that offer greater control over working hours, balancing flexibility with stability, while less educated individuals are pushed into irregular or unstable jobs due to weaker bargaining power. This finding aligns with European evidence showing that education shapes time use, autonomy, and work–life balance. Stoilova & Ilieva-trichkova (2020) observe that higher education lowers acceptance of traditional gender norms and reduces unpaid domestic work for both men and women, promoting more egalitarian time allocation. Conversely, lower education limits agency, making workers less able to prioritize work–life balance. Kromydas (2020) similarly finds that higher education improves wages and employment prospects but can heighten work–life tension for women, whose professional responsibilities often coexist with domestic obligations. Nonetheless, education provides resilience during economic downturns by enhancing adaptability. Together, these insights underscore the dual nature of education in flexible labor markets, while it protects against precarity and strengthens autonomy, it cannot fully dismantle structural and gendered inequalities that continue to shape labor outcomes in the gig economy.

Training participation shows a statistically significant negative association with both adequate and overworked employment outcomes ($p < 0.05$), a finding that at first appears counterintuitive but points to deeper structural issues within the labor market and training ecosystem. One possible explanation is that the design and targeting of training programs themselves are directed toward individuals already facing precarity, such as the unemployed, underemployed, or informal gig workers, making training participation a proxy for labor market vulnerability rather than a driver of improved outcomes. This interpretation aligns with broader international evidence emphasizing that the impact of training on employability is largely contingent upon its institutional integration and industry linkage. As Kebede et al. (2024) argue, training systems in developing economies often fail to bridge the classroom–workplace divide due to weak collaboration between educational institutions and industry. Without mechanisms such as cooperative apprenticeships, work-based learning, or dual training models, skill acquisition remains detached from actual market needs, limiting the potential for upward mobility. Similarly, Klassen et al. (2023) highlight that fragmented, government-centric approaches to vocational education rarely produce lasting labor market outcomes. Their Inclusive Systems Development framework underscores that effective training requires a systemic ecosystem connecting public agencies, private employers, and communities to ensure both relevance and sustainability.

Lastly, holding multiple jobs significantly decreases the likelihood of being in adequate or overworked categories relative to underemployment ($\beta = -0.190$ and -0.634 , $p < 0.01$). This suggests that multi-job workers, instead of being better integrated into the labor market, may experience fragmented time allocation across low-hour engagements, a form of disguised underemployment within the gig economy. Overall, the multinomial results reinforce the central argument that flexibility in Indonesia's gig economy remains unevenly distributed and often intertwined with precarity.

Women, younger workers, and those with lower education or fragmented employment structures face the highest risk of underemployment, whereas the potential for overwork appears concentrated among mid-career male workers seeking income stability. These findings confirm that flexibility in working time does not necessarily imply autonomy or well-being but can instead reflect constrained choices under structural labor-market inequalities.

4. Conclusion and Recommendations

This study provides new empirical evidence on the dual nature of flexibility and precarity in Indonesia's gig economy by examining wage adequacy and working-hour disparities. The analysis reveals that flexibility in gig work does not necessarily translate into economic empowerment, particularly for women and less-educated workers. Instead, it often reproduces underlying inequalities in income and labor-time stability that characterize the broader labor market.

The findings highlight that flexibility without institutional safeguards tends to reinforce existing vulnerabilities rather than create equitable opportunities. Women remain disproportionately concentrated in low-hour and low-paying activities, while multiple job holding serves primarily as an income survival mechanism rather than a pathway to improved well-being. Education continues to act as the most consistent predictor of upward mobility, but training programs show limited effectiveness, suggesting a mismatch between the skills being offered and the evolving demands of the gig economy.

From a policy perspective, these results underscore the urgency of integrating social protection, fair pay mechanisms, and working-hour regulation into the digital labor framework. Strengthening minimum wage enforcement, expanding access to contributory social insurance for non-standard workers, and aligning vocational training curricula with digital and platform-based job requirements would be critical steps toward inclusive labor flexibility. Furthermore, gender-sensitive labor policies, such as subsidized childcare, targeted upskilling programs, and monitoring of wage parity, are essential to prevent the feminization of precarity within the gig economy.

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