The Individual and Contextual Factors of Precarious Employee Status of Youth Workers: Application Multilevel Binary Logistic Regression

A S Mandy[1], Sugiarto[1*]

[1] Politeknik Statistika STIS

*Corresponding author's email: soegie@stis.ac.id

Abstract. Human resources are a strategic component for countries in achieving development goals and promoting progress. Among age groups, youth play an important role as drivers of a country's development. However, the challenge of obtaining decent work is a serious problem that causes many youth people in Indonesia to be forced into precarious employment. In the last four years, the Precarious Employment Rate (PER) of youth people in Indonesia in 2024 has increased dramatically compared to the previous year, even becoming the highest among all age groups. This study aims to determine the general picture and analyze the individual and contextual factors that influence the status of precarious employees among youth workers in Indonesia. The analysis method used is multilevel binary logistic regression. The results of the study show that 85.97 percent of youth workers in Indonesia have precarious employee status. The analysis shows that individual factors such as gender, marital status, education level, participation in training, regional classification, employment sector, labor union membership, and contextual factors such as the provincial minimum wage have a significant effect on the precarious employee status of youth workers in Indonesia in 2024.
Keyword: Precarious Employee, Multilevel Binary Logistic Regression, Youth.

1. Introduction

Human resources are a strategic component for countries in achieving development goals and promoting progress. Human resources refer to the ability of individuals to act as adaptive and transformative social beings, capable of managing themselves and utilizing natural resources to achieve prosperity in a balanced and sustainable manner [1]. This ability makes human resources an asset that drives innovation and sustainable development. In the 2025-2029 National Medium-Term Development Plan (RPJMN) I, human resource development is included in the eight national priorities, emphasizing the importance of human resources in national development [2].

Youth people, as an integral part of human resources, have great potential to drive national progress. Based on Law Number 40 of 2009 concerning Youth, youth people are Indonesian citizens who are experiencing an important phase of growth and development between the ages of 16 and 30 [3]. Youth

play a role as agents of change who contribute to positive transformation in the economic, social, and environmental fields [4]. The strategic role of youth is reflected in the fourth national priority of the2025-2029 RPJMN I, which emphasizes the importance of youth empowerment for sustainable development [2].

Based on data from BPS Statistics Indonesia in 2024, the number of youth people in Indonesia reached around 64.22 million, or one-fifth of the total population of Indonesia. Although this number does not dominate the proportion of Indonesia's population, 64 million youth people is not a small number [5]. Of this number, 56.98 percent of youth people in Indonesia are employed. Having a job does not always guarantee stable or prosperous economic conditions because not all available jobs meet the standards of decency. Decent work is a crucial aspect that requires more attention, given that it greatly affects the welfare of youth people. Decent work enables every individual, especially youth people, to work productively and fulfill their basic rights as human beings.

Decent work is a global development agenda included in the Sustainable Development Goals (SDGs) in the eighth goal with the target of protecting workers' rights and promoting a safe and secure working environment for all workers. The International Labor Organization (ILO), through the Decent Work Agenda, campaigns for the urgency of decent work so that every individual, including youth people, can obtain work that guarantees their livelihood. The Decent Work Agenda established four strategic pillars as its main focus, namely rights at work, full and productive employment, social protection, and social dialogue. At the 18th International Conference of Labour Statisticians, the ILO developed a framework of Decent Work Indicators comprising ten key elements. These ten elements correspond to the four strategic pillars outlined in the Decent Work Agenda.

One of the elements that most closely aligns with the four strategic pillars is the element of stability and job security. The element of stability and job security refers to two things, namely the duration of the employment contract and the possibility of workers being dismissed at any time from their current jobs. Job instability and lack of job security are one of the main sources of stress and concern for some workers. Even if the job loss is short-term, it can have an impact on financial losses and the loss of accumulated human capital. The main indicator used by Statistics Indonesia to measure job stability and security is the Precarious Employment Rate (PER). Precarious employment refers to people who work as casual workers, seasonal workers, workers with short-term employment contracts, and workers with employment contracts that can be terminated at any time under certain conditions with only a short notice. This indicator is important because workers in precarious employment do not have permanent employment relationships (they are only employed when needed) and are usually employed for short periods of time. In addition, they are not protected by social security [6].

Based on figure 1, PER according to age groups in Indonesia in 2024 is dominated by the 16-30 age group (youth) at 54.36 percent. This high proportion indicates the vulnerability of youth people to precarious employment, which has various adverse effects. precarious employment creates feelings of instability and insecurity that can affect various aspects of youth people's lives [7]. Youth people who work in precarious employment in the long term have an impact on their welfare and make it difficult to plan for the future [8]. In addition, youth people often experience repeated periods of unemployment [9]. Precarious employment also causes the risk of mental health disorders in youth people ([10], [11], [12]).

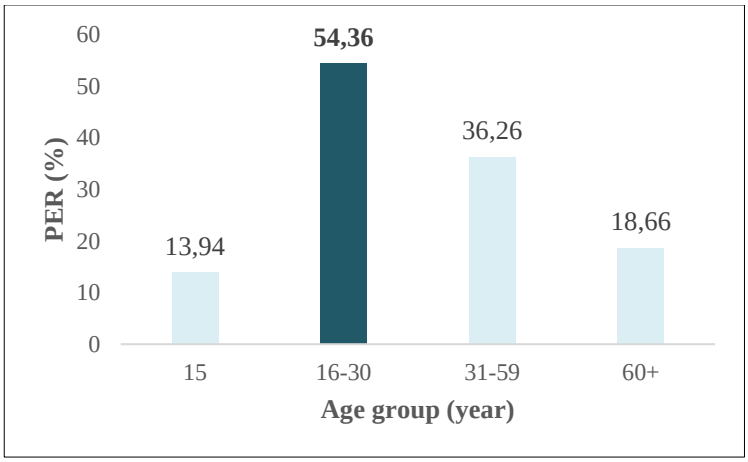

Figure 1. PER by age group in Indonesia, 2024.

When viewed by province, it appears that the PER for youth people in Indonesia varies greatly. Based on figure 2, it can be seen that the Riau Islands Province has the highest PER for youth people, at 68.96 percent, followed by the provinces of Bali and Jakarta Special Region with PERs of 66.10 percent and 65.92 percent, respectively. The province with the lowest youth PER is Papua Pegunungan Province at 1.35 percent. This difference indicates that regional economic conditions influence the phenomenon of precarious employment among youth workers in Indonesia.

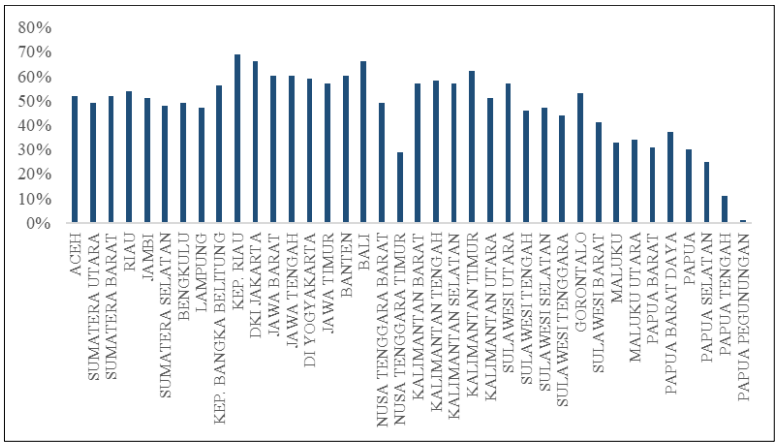

Figure 2. PER youth by province in Indonesia, 2024.

In the context of regional characteristics, previous studies have analyzed precarious employment by including aggregate regional variables. Studies that include regional variables in Indonesia, found that the higher the GRDP, the lower the tendency for a person to become a precarious employee [13]. A high GRDP in a region indicates higher labor productivity, which encourages the creation of stable employment opportunities and reduces the risk of job loss. Companies' decisions regarding their employees during the business cycle will depend on the demand for goods and services [14].

Previous studies have discussed precarious employment only qualitatively, such as Yasih [15] discusses precarious employment among young people in Jakarta, Hidayati et al. [16]discuss the conditions of teachers in rural areas in Indonesia. Meanwhile, other studies such as Pontoh & Projo [13]

and Utomo & Sugiharti (2022) [17] discuss precarious employment in general and do not specifically highlight youth issues.

The urgency of the high percentage of youth people in Indonesia who are classified as precarious employees and the complexity of the factors that are thought to influence this at both the individual and contextual levels make this research important because there have been no studies in Indonesia that explicitly integrate the regional dimension as an explanatory variable in analyzing precarious employee status, especially among youth people. This issue needs to be addressed by the government and society because if it is not handled properly, it has the potential to become a bigger problem in the future. This study aims to provide an overview and analyze the influence of individual and contextual factors on the precarious employee status among youth workers in Indonesia in 2024. The data used in this study is hierarchical in structure with categorical dependent variables. Considering the influence of interregional variations in the data, multilevel analysis is important to use because it is relevant for comprehensively examining the dynamics of precarious employment at both the individual and contextual levels.

2. Literature Study

2.1 Precarious employment

According to the European Metalworkers Federation (EMF), precarious employment is low-paid, unsafe, unprotected work that cannot support a household [18]. According to Fiorito et al. [19], precarious employment is a form of work that is uncertain, unstable, and unsafe. In such conditions, workers bear all the risks of the job and do not receive social security or legal protection.

The standard measurement of precarious employment in Indonesia refers to the concept developed by BPS. In measuring it, BPS conducts surveys through Sakernas. Workers who fall into the precarious employment category are employees/laborers/staff with fixed-term employment contracts through written agreements, employees/laborers/staff with fixed-term employment contracts through verbal agreements, employees/laborers/staff without employment contract agreements, as well as casual workers, both agricultural and non-agricultural [6].

2.2 Youth workers

The International Classification of Status in Employment 1993 (ICSE-93) is an international standard in statistics for classifying primary employment status. The classification is based on characteristics outlined in employment agreements. In general, the classification of employment status in ICSE-93 is based on two main categories, namely paid employment and self-employment. Paid employment is work based on an employment contract, whether written, verbal, or implied, in which workers receive basic remuneration that does not depend directly on the income of the unit where they work, such as companies, non-profit organizations, government agencies, or households. In this type of employment, workers do not bear the economic risks of the business unit. Meanwhile, self-employment is work where the remuneration received depends directly on the profits from the goods or services produced, including consumption for oneself, which is considered part of the profit.

In Indonesia, the classification of employment status in Sakernas refers to the classification established in ICSE-93. BPS classifies main employment status into seven categories, namely self-employed, assisted by temporary workers/family workers/unpaid workers, assisted by permanent and paid workers, laborers/employees/staff, freelance workers in the agricultural sector, freelance workers in the non-agricultural sector, and family workers/unpaid workers. Paid workers include laborers/employees, self-employed workers in the agricultural sector, and self-employed workers in the non-agricultural sector. Law No. 40 of 2009 concerning Youth states that youth are Indonesian citizens who are entering an important period of growth and development, aged 16 (sixteen) to 30 (thirty) years

[3]. Thus, youth workers are residents aged 16-30 who work for other people/employers/institutions and receive wages with the status of laborers/employees/staff, casual workers in agriculture, and casual workers in non-agriculture.

2.3 Individual and contextual factors that affect precarious employee status

Men have higher levels of aggression and risk-taking, while women have higher levels of nurturing, gentleness, and other-orientation than men. Female workers are more likely to be precarious employees than men ([20], [21]). Marriage provides stability in an individual's life, encouraging them to seek stable employment to provide for their family [21]. Lower education levels provide greater opportunities for youth people to have precarious employment ([8], [22]). Training is a short-term development effort, designed in a structured and systematic manner to improve performance while opening up career development opportunities [23]. Individuals with more work experience tend to have much better work abilities [24].

ILO [25] states that there are obstacles and difficulties in finding employment in rural regionals. Limited opportunities for decent work in rural regionals are influenced by the lack of quality jobs available and the low wages offered compared to urban regionals [26]. Research by Mckay et al. [27] states that the agriculture, mining, and manufacturing sectors are more vulnerable to precarious employment. Labor unions are an important component in protecting workers [28]. Labor unions function as institutions that help protect workers' rights, facilitate harmonious relations between workers and employers, and increase workers' bargaining power in negotiations related to working conditions and welfare. With this role, labor unions contribute to creating fairer and more decent job security for their members [26].

Company decisions regarding their employees during the business cycle will depend on the demand for goods and services [14]. Research by Pontoh & Projo [13] found that the higher the GRDP, the lower the tendency for someone to become a precarious employee. A high GRDP in a region indicates higher labor productivity, which encourages the creation of stable employment opportunities and reduces the risk of job loss. Enforcement of minimum wage policies has led to a decline in the percentage of workers with precarious employment [29]. In addition, research by Håkansta et al. [30] confirms that the effectiveness of minimum wage policies in reducing precarious employment is highly dependent on law enforcement. Effective law enforcement ensures that minimum wages are consistently enforced so that workers receive fair wages.

3. Research Method

3.1 The scope of research

The data used in this study is raw data sourced from the August 2024 Sakernas, dynamic tables on the official BPS website, and the One Data Employment Portal. The limitation of this study lies in the classification of workers with precarious employee status applied by BPS and referring to ILO provisions. This classification only covers workers or laborers with the status of casual workers in agriculture, casual workers in non-agriculture, and laborers/employees/staff. Meanwhile, laborers with the status of self-employed, assisted self-employed, and family workers do not yet have classification provisions in this context. Therefore, the unit of analysis in this study is limited to the aforementioned groups of workers.

The unit of analysis used is youth workers, namely residents aged 16-30 years who work for others and receive wages with their main employment status being laborers/employees/staff, casual workers in agriculture, and casual workers in non-agriculture. The dependent variable in this study is the precarious

employee status of youth workers, which is divided into two categories, namely precarious employees and non-precarious employees.

In this study, precarious employee status was determined based on the August 2024 Sakernas questionnaire (SAK24.AK) in question 14.a regarding primary employment status and question 26.a regarding the possession of an employment agreement/contract/decree. The categorization rules based on the SAK24.AK questionnaire are as follows.

3.1 Code 1 (precarious employee) if the answer is coded:
R14.a = 5 or 6, or R14.a = 4 and (R26.a = 2 or 3 or 4)

3.2 Code 0 (non-precarious employee) if the answer is coded:
R14.a = 4 and (R26.a = 1 or 5)

This study uses ten independent variables grouped into two factors, namely individual factors and contextual factors. Variables in the individual factor include gender, marital status, education level, training participation, work experience, regional classification, employment sector, and labor union membership. Meanwhile, the variables in the contextual factor in this study are GDRP at current prices and provincial minimum wage. The operational definitions of the independent variables used in this study are as follows.

Gender

The gender variable is categorized into two categories, namely male and female. The categorization is as follows.

0 = Male

1 = Female

Marital status

The marital status variable was obtained from the August 2024 Sakernas questionnaire, which had four answer options, namely unmarried, married, divorced, and widowed. If the answer to the question was unmarried, then the marital status was unmarried, but if the answer was married, divorced, or widowed, then the marital status was ever married. The categorization of the marital status variable in this study is as follows.

0 = Ever married

1 = Unmarried

Education level

In general, the education system in Indonesia starts from elementary school, middle school, to college. This variable is divided into two categories, namely ≤high school (elementary and middle school) and >high school (college). The categorization is as follows.

0 = >High school

1 = ≤High school

Training participation

The training participation variable was obtained from the August 2024 Sakernas questionnaire, which had two answer options, namely yes and no. If the answer to the question was yes, then the respondent was categorized as ever participated in training, but if the answer was no, then the

respondent was categorized as never participated in training. The categorization of this variable is as follows.

0 = Ever

1 = Never

Work experience

The work experience variable was obtained from the August 2024 Sakernas questionnaire, which had two answer options, namely yes and no. If the answer to the question was yes, then the respondent was categorized as having work experience, but if the answer was no, then the respondent was categorized as not having work experience. The categorization of this variable is as follows.

0 = Have

1 = Don't have

Regional classification

Regional classification variables are categorized into two types: urban and rural. The categorization of these variables is as follows.

0 = Urban

1 = Rural

Occupation sector

The Indonesian Standard Industrial Classification (KBLI) consists of 21 categories classified into three sectors, namely agriculture, manufacturing, and services. The categorization of this variable refers to the BPS publication in grouping industries into three major groups. The categorization of these variables is as follows.

0 = Service (KBLI 2020 categories G-U)

1 = Manufactur (KBLI 2020 categories B-F)

2 = Agriculture (KBLI 2020 categories A)

Labor union membership

This variable is obtained from the August 2024 Sakernas survey, which provides three response options: yes, no, and don't know. If the respondent answers yes, they are categorized as joined, whereas if the response is no or don't know, they are categorized as not joined. The categorization of this variable is as follows:

0 = Joined

1 = Not joined

GRDP at current prices

GRDP at current prices is obtained from dynamic tables on the official BPS website. The data used is GRDP at current prices in 38 provinces in Indonesia.

Provincial minimum wage

Provincial minimum wage (UMP) variable is obtained from the One Data Portal on Employment on the official website of the Kemnaker.

3.2 Analysis method

This study uses a binary logistic multilevel regression method with random intercepts because it is in line with the research objective, which is to determine the effect of variation between level two units on the precarious employee status of youth workers, assuming that the effect of each independent variable on the dependent variable is the same for each group. The software used in this study is Microsoft Office Excel and Rstudio. The significance level used in this study is five percent.

3.3 Research model

The multilevel binary logistic regression model with random intercepts formed in this study is as follows.

$$\begin{aligned} ln\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = {} & \hat{\gamma}_{00} + \hat{\gamma}_{10}Gender_{ij} + \hat{\gamma}_{20}Marital_{ij} + \hat{\gamma}_{30}Education_{ij} \\ & + \hat{\gamma}_{40}Training_{ij} + \hat{\gamma}_{50}Experience_{ij} + \hat{\gamma}_{60}Regional_{ij} \\ & + \hat{\gamma}_{70}Sector(1)_{ij} + \hat{\gamma}_{80}Sector(2)_{ij} + \hat{\gamma}_{90}Union_{ij} + \hat{\gamma}_{01}GRDP_j \\ & + \hat{\gamma}_{02}Wage_j + \hat{u}_{0j} \end{aligned} \quad (1)$$

Note:

$Gender$	: gender (0 = Male, 1 = Female)
$Marital$	: marital status (0 = Ever married, 1 = Unmarried)
$Education$	: education level (0 = >High school, 1 = ≤High school)
$Training$	: training participation (0 = Ever, 1 = Never)
$Experience$	: work experience (0 = Have, 1 = Don't have)
$Regional$	: regional classification (0 = Urban, 1 = Rural)
$Sector(1)$	: dummy variable of occupation sector (manufactur sector)
$Sector(2)$	: dummy variable of occupation sector (agriculture sector)
$Union$	: labor union membership (0 = Joined, 1 = Not joined)
$GRDP$	: Gross Regional Domestic Product at current prices (billions rupiahs)
$Wage$	: provincial minimum wage (millions rupiahs)

3.4 Multilevel binary logistic regression analysis

3.4.1 Testing the significance of random effects. The estimation process using maximum likelihood will produce statistics called deviance [31]. This value indicates the extent to which the model fits the data. Models with lower deviance values are considered to be a better fit than models with higher deviance values. Random effect testing aims to test whether a model with random effects (multilevel regression model) is better than a model without random effects (ordinary regression model) using a likelihood ratio test. The hypotheses of random effect testing are as follows.

$H_0 : \sigma_{u0}^2 = 0$ (random effects are not significant or there is no variation between provinces)

$H_1 : \sigma_{u0}^2 \neq 0$ (random effects are significant or there is variation between provinces)

The test statistics used are as follows.

$$LR = -2\ ln\left(\frac{likelihood\ value\ without\ random\ effect}{likelihood\ value\ with\ random\ effect}\right) \sim \chi^2_{(1)} \quad (2)$$

Reject H_0 if the likelihood ratio test value $(LR) > \chi^2_{(\alpha,1)}$ or $p - value < \alpha$, indicating that the random effect is significant. This means that a model containing a random effect (multilevel regression model) is better than a model without a random effect (ordinary regression model).

3.4.2 Parameter estimation. The parameter estimation method used in multilevel binary logistic regression models is maximum likelihood estimation (MLE). This method maximizes the likelihood function by using the inverse of the link function to predict the dependent variable. In multilevel models, MLE is generally known as a method that produces efficient and asymptotically consistent estimates. MLE is obtained through an iterative process that begins with parameter estimates, which are then improved in each subsequent iteration so that the estimated parameter values change during the iterative process [31].

3.4.3 Simultaneous testing of parameter significance. Simultaneous parameter testing aims to test the combined effect of independent variables on dependent variables. The hypotheses used in this test are as follows.

$H_0 : \gamma_{10} = \gamma_{20} = \cdots = \gamma_{p0} = \gamma_{01} = \cdots = \gamma_{0q} = 0$ (there are no independent variables that affect the dependent variable)

H_1 : there is at least one γ_{p0} or $\gamma_{0q} \neq 0$ (at least one independent variable affects the dependent variable),

$p = 1, \dots, P, q = 1, \dots, Q, P =$ total level one parameters, $Q =$ total level two parameters

The test statistics used are as follows.

$$G = -2\, ln\, ln \left(\frac{likelihood\ without\ independent\ variables}{likelihood\ with\ indenpendent\ variables} \right) \sim \chi^2_{(df)} \tag{3}$$

Where df is the number of parameters at both level one and level two. The decision to reject H_0 if $G > \chi^2_{(\alpha,df)}$ or $p - value < \alpha$ then it can be concluded that the model with independent variables is better than the model without independent variables, which means that there is at least one independent variable that affects the dependent variable.

3.4.4 Partial testing of parameter significance. Partial parameter testing aims to test which independent variables affect the dependent variables in the model at each level. This test uses the Wald test. The hypotheses for partial testing are as follows.

First level (individual factors)

$H_0 : \gamma_{p0} = 0$ (the p-th independent variable has no effect on the dependent variable)

$H_1 : \gamma_{p0} > 0$ (the p-th independent variable has a positive effect on the dependent variable)

To perform partial first level parameter testing, the Wald test statistic used is as follows.

$$W_{p0} = \frac{\hat{\gamma}_{p0}}{se(\hat{\gamma}_{p0})} \sim N(0,1) \tag{4}$$

For first level parameters, reject H_0 if $W > Z_\alpha$ or $p - value < \alpha$, which means that the p-th independent variable has a positive effect on the dependent variable.

Second level (contextual factors)

$H_0 : \gamma_{q0} = 0$ (the q-th independent variable has no effect on the dependent variable)

$H_1 : \gamma_{q0} < 0$ (the q-th independent variable has a negative effect on the dependent variable)

To perform partial second level parameter testing, the Wald test statistic used is as follows.

$$W_{0q} = \frac{\hat{\gamma}_{0q}}{se(\hat{\gamma}_{0q})} \sim N(0,1) \tag{5}$$

For second level parameters, reject H_0 if $W < Z_\alpha$ or $p - value < \alpha$, which means that the q-th independent variable has a negative effect on the dependent variable.

3.4.5 Interpretation of regression coefficient significance with an odds ratio. The odds ratio is used to determine the extent to which independent variables at both the individual and contextual factors

influence the precarious employee status of youth workers in Indonesia. The odds ratio is calculated using the following formula:

$$OR = e^{\gamma p0} \qquad p = 1,2,\dots,8 \qquad (6)$$

$$OR = e^{\gamma 0q} \qquad q = 1,2 \qquad (7)$$

4. Result and Discussion

4.1 Overview of the Characteristics of Precarious Employee Status among Youth Workers in Indonesia in 2024

The scope of this study covers all provinces in Indonesia in 2024. Based on the definition of the Central Bureau of Statistics (BPS), the worker category consists of laborers/employees/staff, self-employed workers in agriculture, and self-employed workers in non-agriculture. Among youth people who are classified as workers, 85.97 percent are classified as precarious employees, while the remaining 14.03 percent are classified as non-precarious employees. These findings show that the proportion of precarious employees is higher than that of non-precarious employees.

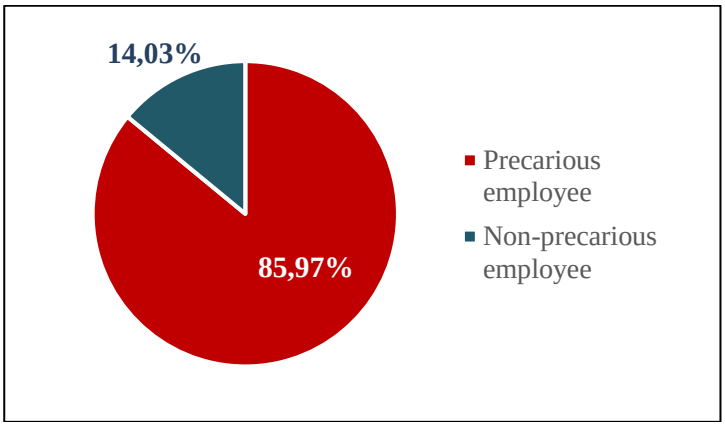

Figure 3. Youth workers based on precarious status in Indonesia, 2024.

The percentage of precarious employees among youth workers varies across provinces in Indonesia in 2024, as shown in figure 4. Based on the figure 4, West Nusa Tenggara Province has the highest percentage of precarious employees in Indonesia, at 92.46 percent, followed by West Sulawesi and Aceh Provinces at 92.40 percent and 91.76 percent, respectively. Meanwhile, Papua Pegunungan Province has the lowest percentage of precarious employees, at 62.37 percent.

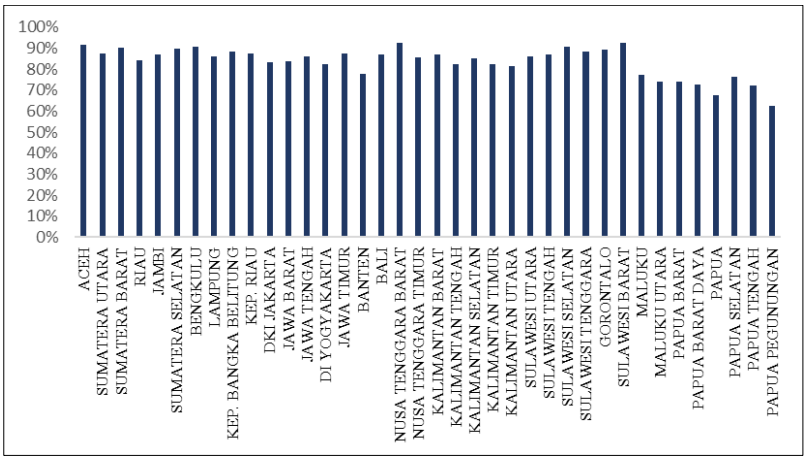

Figure 4. Youth workers based on precarious status by province in Indonesia, 2024.

The high percentage of precarious employees in West Nusa Tenggara Province is due to the number of youth people classified as precarious employees dominating over non-precarious employees. This dominance results in a very large proportion of the total, leading to a high percentage. The low percentage of precarious employees in Papua Pegunungan Province is because the majority of youth people working in Papua Pegunungan have the employment status of family workers and assisted workers, which automatically excludes them from the analysis unit in this study. Based on Sakernas data from August 2024, the percentage of youth people working with the status of family workers and assisted workers is 76.70 percent and 17.42 percent, respectively.

4.2 Characteristics of Variables Related to Precarious Employee Status among Youth Workers Indonesia in 2024

4.2.1 Individual characteristics. Table 1 shows the percentage of precarious employees among youth workers in Indonesia based on individual characteristics. Based on this table, it was found that most youth workers are precarious employees.

Table 1. Characteristics of precarious employee status among youth workers according to individuals.

Independent Variables	Category	Precarious Employee Status (%)	
		Precarious Employee	Non-precarious Employee
Gender	Female	84,40	15,60
	Male[a]	86,90	13,10
Marital status	Unmarried	86,70	13,30
	Ever-married[a]	84,30	15,70
Education level	≤High school	88,40	11,60
	>High school[a]	77,50	22,50
Training participation	Never	88,10	11,90
	Ever[a]	81,50	18,50
Work experience	Don't have	84,80	15,20
	Have[a]	88,00	12,00
Regional classification	Rural	88,20	11,80

	Urban[a]	84,40	15,60
	Agriculture	91,90	8,10
Occupation sector	Manufactur	87,10	12,90
	Service[a]	84,40	15,60
Labor union	Not joined	86,90	13,10
membership	Joined[a]	61,20	38,80

[a] References categories

As much as 86.9 percent of youth workers are precarious employees. Meanwhile, in the female category, 84.4 percent of youth workers are precarious employees. Thus, the proportion of male youth workers with precarious employee status is higher than that of women. In general, precarious employment is not dominated by a particular gender because both men and women show a higher percentage of precarious employees than non-precarious employees [26].

Youth workers with precarious employee status are predominantly unmarried, accounting for 86.7 percent. Research by Sapkal & Sundar [21] states that marriage provides stability in an individual's life, encouraging them to seek stable employment to meet their family's needs. Based on this, the high percentage of precarious employees among unmarried youth workers may be related to the absence of dependents to support a nuclear family that requires economic stability through permanent employment.

Youth workers with precarious employee status are predominantly those with a high school education or below (≤high school) at 88.4 percent. The decline in the percentage of precarious employment and the increase in the educational level of workers indicate that educational level can influence the status of precarious employment among workers [13]. Research by Kretsos & Livanos [20] explains that workers with higher educational levels have better working conditions.

Youth workers with precarious employee status are predominantly those who have never participated in training, at 88.1 percent. Precarity reflects the lack of skills possessed by workers [21].

The majority of youth workers, both those with and without work experience, are classified as precarious employees. However, the percentage of precarious employees among youth workers with work experience is higher than among those without work experience, at 88 percent and 88.4 percent, respectively.

Youth workers with precarious employee status are predominantly those living in rural regionals, accounting for 88.2 percent. Opportunities to obtain decent work in rural regionals are increasingly difficult to find [26]. This situation is exacerbated by the gap between rural and urban regionals, both in terms of the limited availability of decent work and the low wage levels in rural regionals.

The agricultural sector is the employment sector with the highest percentage of precarious employees among youth workers, at 91.90 percent. This percentage is followed by the manufacturing sector at 87.10 percent and the service sector at 84.40 percent. Differences between employment sectors can be an early indication of whether workers are likely to be classified as precarious employees or not.

Youth workers with precarious employee status are predominantly those who are not union members, accounting for 86.9 percent. Labor unions function as institutions that help protect workers' rights, facilitate harmonious relations between workers and employers, and increase workers' bargaining power in negotiations related to working conditions and welfare [26]. With this role, labor unions contribute to creating fairer and more decent job security for their members.

4.2.2 Contextual characteristics. Variables at the contextual level are presented using quadrant analysis. Based on the results of the quadrant analysis in figure 5, most provinces in Indonesia are in quadrants I and III. Of the 38 provinces, there are 13 provinces in quadrant I, which are regions with high GRDP at current prices and a high percentage of precarious employees, namely Aceh, North Sumatra, West Sumatra, Jambi, South Sumatra, Lampung, Riau Islands, Central Java, East Java, Bali, West Kalimantan, Central Sulawesi, and South Sulawesi. Meanwhile, there are 13 provinces in quadrant III, which are regions with low GRDP at current prices and low percentages of precarious employees. The provinces included in this quadrant are the Special Region of Yogyakarta, East Nusa Tenggara, Central Kalimantan, North Kalimantan, North Sulawesi, Maluku, North Maluku, West Papua, Southwest Papua, Papua, South Papua, Central Papua, and Papua Pegunungan.

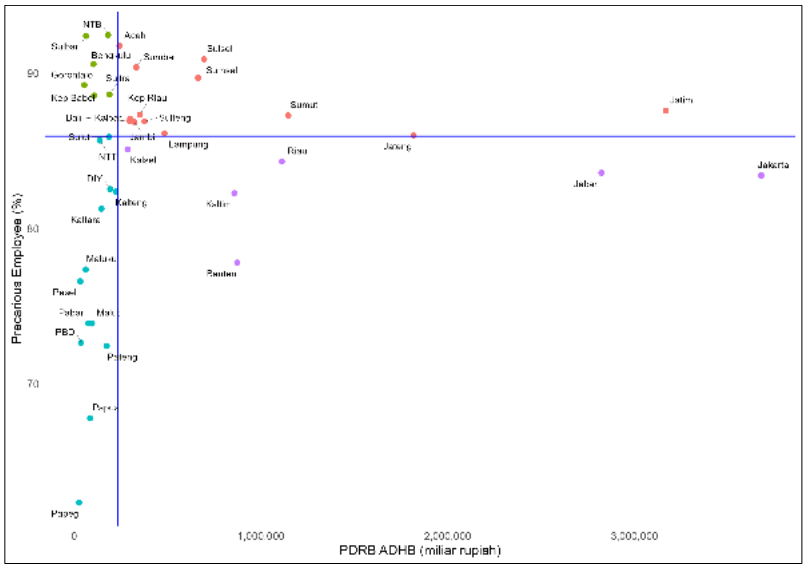

Figure 5. Plot of the percentage quadrant of precarious employees among youth workers and GRDP by province in Indonesia, 2024.

Based on figure 6, the majority of provinces in Indonesia are located in quadrants II and IV. Quadrant II shows regions with low minimum wages and a high percentage of precarious employees. Several provinces located in quadrant II are North Sumatra, West Sumatra, Jambi, Lampung, Bengkulu, Central Java, East Java, Bali, West Nusa Tenggara, West Kalimantan, Southeast Sulawesi, Central Sulawesi, West Sulawesi, and Gorontalo. Meanwhile, quadrant IV shows regions with high provincial minimum wage and low percentages of precarious employees. Several provinces located in this quadrant are Riau, South Kalimantan, Central Kalimantan, East Kalimantan, North Kalimantan, North Sulawesi, North Maluku, West Papua, Southwest Papua, Papua, South Papua, Central Papua, and Papua Pegunungan.

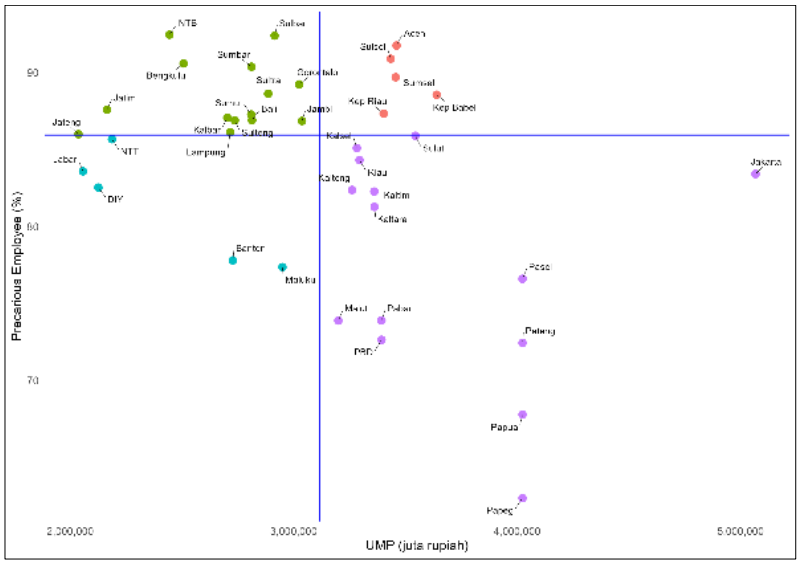

Figure 6. Plot of the percentage quadrant of precarious employees among youth workers and UMP by province in Indonesia, 2024.

4.3 Individual and Contextual Factors that Affect Precarious Employee Status

4.3.1 Random effect significance test. Based on the results of random effect testing using the likelihood ratio test, a p-value of 0.000 and a calculated statistical value of 710,28 > $\chi^2_{(1)} = 3{,}84$ were obtained, so the decision was to reject H_0. Based on this decision, it can be concluded that with a significance level of five percent and the sample size used, there is a significant random effect influencing the precarious employee status of youth workers in Indonesia, so that a multilevel regression model is more appropriate than a regular regression model.

4.3.2 Testing the significance of the multilevel binary logistic regression coefficient. Based on the test results, a G value of 2089.557 was obtained, which is greater than the $\chi^2_{(10)} = 18{,}307$, so the decision is to reject H_0. Based on this decision, it can be concluded that with a significance level of five percent, there is at least one independent variable that affects the precarious employee status of youth workers in Indonesia in 2024. Next, a partial parameter test was conducted using the Wald test. The test results for each parameter in the multilevel binary logistic regression model with random intercept can be seen in table 2.

Table 2. Results of partial testing of logistic regression coefficient parameters.

Independent variables	Category	$\hat{\gamma}$	*Z-value*	*p-value*	*Odds ratio*
	Individual factors				
Intercept		0,530	1,528	0,126	1,699
Gender	Female	0,067	2,570	0,005*	1,069
	Male[a]				
Marital status	Unmarried	0,240	9,342	0,000*	1,271
	Ever-married[a]				
Education level	≤High school	0,589	20,223	0,000*	1,802

	>High school[a]				
Training participation	Never	0,300	11,528	0,000*	1,350
	Ever[a]				
Work experience	Don't have	-0,260	-9,855	1,000	0,771
	Have[a]				
Regional classification	Rural	0,198	7,309	0,000*	1,220
	Urban[a]				
Occupation sector	Agriculture	0,376	7,638	0,000*	1,457
	Manufactur	0,102	3,355	0,000*	1,107
	Service[a]				
Labor union membership	Not joined	1,245	25,936	0,000*	3,472
	Joined[a]				
Contextual factors					
GRDP at current prices		0,000	0,417	0,662	1,000
Provincial minimum wage (UMP)		-0,247	-2,320	0,010*	0,781

[a] References categories

Based on partial significance testing using the Wald test in table 2, the variables of gender, marital status, education level, training participation, regional classification, employment sector, and labor union membership have Wald test statistical values greater than $Z_\alpha = 1{,}64$ and p-values less than $\alpha = 0{,}05$, so the decision is to reject H_0. The provincial minimum wage variable has a Wald test statistic value smaller than $Z_\alpha = -1{,}64$ and a p-value less than $\alpha = 0{,}05$, so the decision is to reject H_0. Based on these decisions, it can be concluded that the variables of gender, marital status, education level, training participation, regional classification, employment sector, labor union membership, and provincial minimum wage have a significant effect on the precarious employee status among youth workers in Indonesia in 2024. However, the variables of work experience and GRDP at current prices do not have a significant effect. The following is the multilevel binary logistic regression equation with random intercept that was formed.

$$\begin{aligned} ln\left(\frac{\hat{\pi}_{ij}}{1-\hat{\pi}_{ij}}\right) = {} & 0{,}530 + 0{,}067Gender_{ij}^{*} + 0{,}240Marital_{ij}^{*} + 0{,}589Education_{ij}^{*} \\ & + 0{,}300Training_{ij}^{*} - 0{,}260Experience_{ij} + 0{,}198Regional_{ij}^{*} \\ & + 0{,}376Sector(1)_{ij}^{*} + 0{,}102Sector(2)_{ij}^{*} + 1{,}245Union_{ij}^{*} \\ & + 0{,}000GRDP_{j} - 0{,}247Wage_{j}^{*} + \hat{u}_{0j} \end{aligned} \quad (8)$$

*) significant at $\alpha = 5\%$

4.3.3 The intepretation of regression model parameters and odds ratio. Female youth workers are more likely to have a precarious employee status, at 1.069 times than male youth workers. Female youth workers are more likely to have a precarious employee status than men ([20], [21]).

Unmarried youth workers are more likely to have a precarious employee status, at a rate of 1.271 times than ever-married youth workers. This result is in line with descriptive analysis which found that the percentage of precarious employees among unmarried youth workers is higher than those ever-married. This finding is supported by the household specialization model, which shows that marriage allows each partner to take on the role of worker and homemaker [20]. Married workers, whether male or female, who are the breadwinners have a great responsibility and will therefore strive to obtain permanent and stable employment to meet the needs of their families. Marriage can bring stability to life, requiring a person to find permanent employment to meet the needs of their family [21].

Youth workers with a high school education or below are more likely to have a precarious employee status, namely 1.802 times than youth workers with a diploma or above. These results are in line with research conducted by Kretsos & Livanos [20], which states that better working conditions occur among workers with higher education. Workers with lower education levels are more likely to be in precarious employment ([21], [26]).

Youth workers who have never participated in training to have a precarious employee status, namely 1.350 times than youth workers who have participated in training. Previous descriptive analyses support this finding, which shows that precarious employee status is more prevalent among youth workers who have never participated in training than those who have. Precariousness in employment is inseparable from the minimal skills possessed by workers, which is a direct reflection of the inability of human resources to access job stability [21].

At a 5 percent significance level, the sample did not provide sufficient evidence to conclude that work experience significantly affects the precarious employee status of youth workers in Indonesia. This condition shows that whether someone has work experience or not makes no difference to their precarious employee status. Work experience does not always indicate the quality, relevance, or stability of previous employment. Someone who has work experience is not automatically safer or more vulnerable to precarious employee status than someone who does not have work experience. Previous work experience does not always reflect how good someone's performance or skills are [32].

Youth workers in rural regionals are more likely to have a precarious employee status, at a rate of 1,220 times than those in urban regionals. This result is in line with previous descriptive analyses showing that precarious employee status is more prevalent among youth workers living in rural regionals than those in urban regionals. There are obstacles and difficulties in finding employment in rural regionals [25]. This is also reinforced by research by Projo & Pontoh [26], which states that opportunities for decent employment in rural regionals are increasingly difficult to find. This condition is exacerbated by the lag of rural regionals compared to urban regionals in terms of both the limited availability of decent jobs and the low wage levels in rural regionals.

The employment sector variable has a significant influence on the precarious employee status of youth workers in Indonesia. Youth workers in the agricultural sector are more likely to have precarious employee status, which is 1.457 times than youth workers in the service sector. Meanwhile, youth workers in the manufacturing sector also have a greater tendency to have a precarious employee status, namely 1.107 times than youth workers in the service sector. Workers in the agricultural sector generally have uncertain incomes, minimal social benefits, and seasonal work. This sector is concentrated in rural regionals characterized by low productivity due to limited infrastructure. Meanwhile, the manufacturing sector generally involves daily or short-term contract work with higher occupational risks that can increase job insecurity. These results are in line with research by Pontoh & Projo (2021) [13], which shows that the agriculture, mining, and manufacturing sectors are more vulnerable to precarious employment than the service sector.

Youth workers who do not join labor unions are more likely to have a precarious employee status, namely 3.472 times than youth workers who join labor unions. Labor unions are an important component in protecting workers [28]. Labor unions function as institutions that help protect workers' rights, facilitate harmonious relations between workers and employers, and increase workers' bargaining power in negotiations related to working conditions and welfare. With this role, labor unions contribute to creating fairer and more decent job security for their members [26]. These findings are in line with research by Sapkal & Sundar [21], which states that workers who are not members of labor unions are more likely to have precarious employee status.

At a significance level of 5 percent, the sample cannot yet provide sufficient evidence to state that the GRDP at current prices variable has a significant effect on the precarious employee status of youth

workers in Indonesia. This conclusion is based on the p-value obtained, which shows a value higher than the specified significance level. This condition indicates that the high or low value of the GRDP does not affect the increase or decrease in the tendency of youth workers to have precarious employee status. This finding is not in line with research by Pontoh & Projo [13], which states that the higher the GRDP, the lower the tendency for a person to have precarious employee status. Upon further examination in the descriptive analysis, the relationship between GRDP at current prices and precarious employee status shows that the data distribution does not follow a specific pattern. This highly varied data and the absence of a specific pattern may be the reason why the GRDP at current prices variable does not have a significant effect on the precarious employee status of youth workers.

Based on table 2, the odds ratio value of this variable is 0.781, which can be concluded that when the provincial minimum wage increases by one million, the tendency for youth workers to become precarious employees is 0.781 times that of the initial condition, assuming that other independent variables remain constant. Based on these results, it can be concluded that the higher the provincial minimum wage in a region, the lower the tendency for youth workers to become precarious employee status. This finding is in line with the findings of research by Nguyen et al. [29], which found that the implementation of a minimum wage causes the percentage of workers with precarious employee status to decrease. A higher minimum wage can increase workers' motivation and productivity in carrying out their duties. This condition encourages the sustainability of employment relationships, so that workers tend to remain employed. This is also reinforced by research conducted by Håkansta et al. [30], which states that an important aspect that influences minimum wage policy and precarious employment is law enforcement. Effective law enforcement ensures that the minimum wage is consistently enforced so that workers receive a decent wage.

Conclusion and Recomendations

Conclusion

As much as 85.97 percent of youth workers in Indonesia have precarious employee status in 2024. West Nusa Tenggara Province is the province with the highest percentage of precarious employee status, while Papua Pegunungan Province is the province with the lowest percentage of precarious employee status in Indonesia. The percentage of precarious employee status is higher among youth workers who are male, unmarried, have a high school education or below, have never participated in training, have work experience, live in rural areas, work in the agricultural sector, and are not members of a labor union.

The analysis results show that individual factors such as gender, marital status, education level, training participation, regional classification, occupation sector, labor union membership, and contextual factors such as the provincial minimum wage significantly influence the precarious employee status of youth workers in Indonesia in 2024.

Recommendations

Based on the conclusions presented above, the recommendations that can be made in this study are as follows. First, government must strengthen the role of labor unions in protecting and helping youth workers obtain their rights. Youth are a potential human resource, so the government, together with various parties, such as investors, employers, and labor unions, must manage this human resource as well as possible.

Second, government must improve access to and the quality of education and training in order to improve the quality of youth people. The government can equalize and improve educational facilities and infrastructure throughout Indonesia and expand access to scholarships for higher education. The

scope of the Job Training Center (BLK) program should be expanded so that more youth can benefit from it.

Third, government must ensure that the minimum wage is set in accordance with a decent standard of living without burdening employers, and strictly monitor its implementation so that employers pay workers' wages in accordance with applicable regulations.

References

[1] B. Bukit, T. Malusa, and A. Rahmat, *Pengembangan Sumber Daya Manusia*. Yogyakarta: Zahir Publishing, 2017.

[2] Bappenas, "Rencana Pembangunan Jangka Menengah Nasional Tahun 2025-2029," Jakarta, 2025. Accessed: Nov. 08, 2025. [Online]. Available: https://peraturan.bpk.go.id/Details/314638/perpres-no-12-tahun-2025

[3] *Undang-Undang Nomor 40 Tahun 2009 tentang Kepemudaan*.

[4] W. Ningsih, "Keterlibatan Pemuda Dalam Pembangunan Berkelanjutan: Tantangan Dan Peluang," 2023.

[5] BPS, "Statistik Pemuda Indonesia 2024," Jakarta, 2024. Accessed: Nov. 08, 2025. [Online]. Available: https://www.bps.go.id/id/publication/2024/12/31/b2dbaac4542352cea8794590/statistik-pemuda-indonesia-2024.html

[6] BPS, "Indikator Pekerjaan Layak di Indonesia 2024," Jakarta, 2024. Accessed: Nov. 08, 2025. [Online]. Available: https://www.bps.go.id/id/publication/2025/04/28/1ecc9dec1ef7a591babf5962/indikator-pekerjaan-layak-di-indonesia-2024.html

[7] K. D. Bone, "'I don't want to be a vagrant for the rest of my life': young peoples' experiences of precarious work as a 'continuous present,'" *J Youth Stud*, vol. 22, no. 9, pp. 1218–1237, Oct. 2019.

[8] J. Chesters and H. Cuervo, "Adjusting to new employment landscapes: Consequences of precarious employment for young Australians," *Economic and Labour Relations Review*, vol. 30, no. 2, pp. 222–240, Jun. 2019.

[9] S. Stuth and K. Jahn, "Young, successful, precarious? Precariousness at the entry stage of employment careers in Germany," *J Youth Stud*, vol. 23, no. 6, pp. 702–725, Jul. 2020.

[10] C. Canivet, T. Bodin, M. Emmelin, S. Toivanen, M. Moghaddassi, and P. O. Östergren, "Precarious employment is a risk factor for poor mental health in young individuals in Sweden: A cohort study with multiple follow-ups," *BMC Public Health*, vol. 16, no. 1, Aug. 2016.

[11] A. S. Rashad and M. F. Sharaf, "Does Precarious Employment Damage Youth Mental Health, Wellbeing, And Marriage? Evidence From Egypt Using Longitudinal Data," 2018. [Online]. Available: www.erf.org.eg

[12] M. Vancea and M. Utzet, "How unemployment and precarious employment affect the health of young people: A scoping study on social determinants," Feb. 01, 2017, *SAGE Publications Ltd*. doi: 10.1177/1403494816679555.

[13] M. R. Pontoh and N. W. K. Projo, "Micro and Macro Determinants of Precarious Employment in Indonesia: An Empirical Study of Paid Workers using Multilevel Binary Logistic Regression," *icdsos*, vol. 2021, no. 1, pp. 717–733, Jan. 2022.

[14] ILO, *Decent Work Indicators Guidelines For Procedurs And Users Of Statistical And Legal Framework Indicators*. 2013. [Online]. Available: www.ilo.org/publns

[15] D. W. P. Yasih, "Jakarta's Precarious Workers: Are they a 'New Dangerous Class'?," *J Contemp Asia*, vol. 47, no. 1, pp. 27–45, 2017.

[16] N. N. Hidayati, R. Sugihartati, and T. P. Rahayu, "Between Loyalty and Precarity: Teachers Living as 'Precarious Workers' of Education Sectors in Indonesian Rural Areas," *International Conference on Multidisciplinary Studies (ICoMSi 2024)*, Atlantis Press, 2025, pp. 47–61.

[17] O. P. Utomo and L. Sugiharti, "Characteristics and Determinants of Precarious Employment in Indonesia Media Trend," 2022, doi: 10.21107/mediatrend.v17i1.17015.

[18] ILO, *From precarious work to decent work : outcome document to the workers' symposium on policies and regulations to combat precarious employment*. ILO, 2012.

[19] J. Fiorito, D. G. Gallagher, Z. A. Russell, and K. W. Thompson, "Precarious Work, Young Workers, and Union-Related Attitudes: Distrust of Employers, Workplace Collective Efficacy, and Union Efficacy," *Labor Stud J*, vol. 46, no. 1, pp. 5–32, Mar. 2021.

[20] L. Kretsos and I. Livanos, "The extent and determinants of precarious employment in Europe," *Int J Manpow*, vol. 37, no. 1, pp. 25–43, Apr. 2016.

[21] R. S. Sapkal and K. R. S. Sundar, "Determinants of precarious employment in India: An empirical analysis," 2017, *Emerald Group Publishing Ltd.* doi: 10.1108/S0277-283320170000031011.

[22] J. Song, "Young people, precarious work, and the development of youth employment policies in Japan," *Japanese Journal of Political Science*, vol. 19, no. 3, pp. 444–460, July 2018.

[23] F. F. Maulyan, "Peran Pelatihan Guna Meningkatkan Kualitas Sumber Daya Manusia dan Pengembangan karir: Theoretical Review," *Jurnal Sains Manajemen*, vol. 1, no. 1, pp. 40–50, Nov. 2023.

[24] E. A. Santoso, "Pengaruh Pengalaman Kerja dan Motivasi terhadap Kinerja Pegawai (Studi pada Kantor Kecamatan Wonosari Kabupaten Bondowoso)," *E-Journal Ekonomi Bisnis Dan Akuntansi*, vol. 1, no. 1, pp. 1–10, 2017.
[25] ILO, "Thematic Labour Overview: Working in Rural Areas in 21st Century. Reality and Prospects of Rural Employment in Latin America and the Caribbean," 2016.
[26] N. W. K. Projo and M. R. Pontoh, "Fenomena Pekerja Tidak Tetap (Precarious Employee) Di Indonesia Dan Faktor-Faktor Penentunya," *Jurnal Ilmu Sosial dan Humaniora*, vol. 11, no. 3, pp. 422–434, Nov. 2022, doi: 10.23887/jish.v11i3.45516.
[27] S. Mckay, S. Jefferys, and A. Paraskevopoulou, "Study on Precarious work and social rights," 2012. [Online]. Available: https://www.researchgate.net/publication/342833651
[28] Y. Cho, "The associations between patterns of precarious employment and workers' health," *Soc Sci J*, vol. 60, no. 2, pp. 199–212, 2023, doi: https://doi.org/10.1016/j.soscij.2019.09.006.
[29] H. Nguyen, M. Z. N. Lin, and S. Ngwenya, "Effect of the Minimum Wage on Employment Security: The Case of Precarious Workers in Myanmar," in *Business and Human Rights in Asia*, Singapore: Springer Singapore, 2021, pp. 127–146. doi: 10.1007/978-981-15-7273-9_7.
[30] C. Håkansta *et al.*, "What is the Role of Minimum Wages in Addressing Precarious Employment in the Informal and Formal Sectors? Findings from a Systematic Review," Apr. 01, 2024, *SAGE Publications Inc.* doi: 10.1177/27551938241286463.
[31] J. Hox, M. Moerbeek, and R. Van de Schoot, *Multilevel analysis: Techniques and Applications*. Routledge, 2018.
[32] C. H. Van Iddekinge, J. D. Arnold, R. E. Frieder, and P. L. Roth, "A Meta Analysis of The Criterion-related Validity of Pre-hire Work Experience," *Pers Psychol*, vol. 72, no. 4, pp. 571–598, 2019, doi: https://doi.org/10.1111/peps.12335.