



An Insight into Youth Unemployment in Indonesia

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Abstract. Youth unemployment in Indonesia has continued to remain at a high level relative to other age categories for several years. The case of Indonesia's youth unemployment is grave with the presence of a low workforce participation rate, informal employment, and higher unemployment rates in young people compared with adults. Due to the lack of research on a country-wise view of youth unemployment, this study focuses on providing a much better understanding of the youth unemployment problem in emerging countries, especially Indonesia. The main aim of the paper is to bridge the research gap on youth unemployment with reference to microeconomic determinants, such as educational background and participation in training. This study utilized the August 2019 data of SAKERNAS (*Survei Angkatan Kerja Nasional*) and analyzed the data using the logistic regression method. Logistic regression is a special econometric model where the dependent variable is considered categorical and dichotomous (binary); in this case, it was unemployed (1) or working (0). The study found that training participation has a negative correlation with youth unemployment, while educational attainment generates mixed results.

1. Introduction

Over the last two decades, there has been a growing concern about youth unemployment and the transition from school to work, as an increasing number of young people are likely to be unemployed when they first start looking for work in Indonesia. As a home to the world's third-largest youth population, which accounts for approximately 25.1% of the total population [1], [2], Indonesia faces significant issues regarding unemployment, the most concerning of which is the high level of youth unemployment in recent years. Despite declining substantially over the past few years, youth unemployment in Indonesia has remained at a high level compared to the other age categories [1], [3].

In 2018, Indonesia's youth unemployment rate was 15.84% while the youth unemployment rate of its neighboring countries was as follows: Malaysia 11.18%, Philippines 6.76%, Singapore 8.61%, Cambodia 1.28%, Vietnam 6.95%, Myanmar 3.87%, and Timor Leste 10.48% [4]. Moreover, Indonesia's open unemployment rate was 7.07% in August 2020, while the youth unemployment rate was 15.86%, 4.17 times higher than the adult unemployment rate of 3.81% (BPS 2020). The ILO categorized this ratio of youth-to-adult unemployment rate as an extreme figure [5]. This phenomenon is similar to what occurred a few years ago in Europe, where the youth unemployment rate was twice as high as the adult unemployment rate [6], [7].

Currently, Indonesia is experiencing a demographic bonus, which means that the country has a potentially large workforce. However, as the world has been divided into two demographic structures: some countries have benefited from the demographic dividend, while others have been confronted with an aging population [8], [9]. The demographic bonus can be an opportunity if the younger generation is



provided proper education and facilities to improve their self-quality [10]. Therefore, Indonesia has been attempting to enhance its human resources to foster future leaders so that the demographic dividend becomes a blessing instead of a curse.

Nonetheless, if youth unemployment is not absorbed by employment opportunities, this demographic gift could turn into a demographic disaster [11]. Unemployment among young people indicates unutilized labor potential and negatively affects potential growth. For that reason, it is important to address youth unemployment in preparation for the demographic windfall. Many studies have found that spells of unemployment experienced during one's early career have profound effects on future labor market outcomes and earnings. For example, youth unemployment reduces the likelihood of future employment [12], [13] and lowers wages throughout people's later careers [12], [14]–[17].

According to BPS-Statistics Indonesia, of the 135 million workforce, 90 percent of them have never attended certified training; similarly, the profile of 7 million Indonesian unemployed, 91 percent of whom have never attended certified training¹. Moreover, the figure of youth unemployment rate always higher than open unemployment rate in the last decade and becomes more severe in the last few years (see Figure 1 in Appendix). It also can be seen from the unemployment rate by age group 15-29 years old comprised for 52.82% from total [1]. In addition, Young unemployed are dominated by those with vocational education at 35.61%, followed by those with high school education of 32.27%, and those with junior high school education as many as 14.01%. These problems are several reasons that youth unemployment causes should be investigated more deeply in Indonesia.

This study seeks to provide a much better understanding of the youth unemployment problem in Indonesia, intending to address the absence of studies discussing youth unemployment in the context of Indonesia as a country. This is one of the latest attempts to identify, investigate, and analyze the causes of youth unemployment in Indonesia. Moreover, this study intends to reveal the unique factors of youth unemployment in Indonesia; especially, it will fill the literature gap regarding Indonesia and help improve people's overall understanding of youth unemployment in emerging countries. The aim of this study is mainly to investigate whether young Indonesians who have undertaken training and received better education are less likely to be unemployed, compared with their counterparts who have not undertaken training and have a poor education. Two hypotheses were thus formulated for this study:

Hypothesis 1: Young people who have not undertaken training are more likely to be unemployed.

Hypothesis 2: Young people who have received a poorer education are more likely to be unemployed.

2. Literature review

To contextualize this study within the wider context of the literature, it will review fundamental studies on (i) the Indonesian labor market, (ii) the economic and population structure change in Indonesia, (iii) the concept of youth unemployment, (iv) the factors related to the youth unemployment, and (v) the empirical evidence on youth unemployment.

2.1. The Indonesian labor market

Indonesia's labor force is concentrated in a narrow range of occupations, with many workers having low levels of education and working in low-skilled jobs. The majority of the employed population has a junior high school diploma or less and continues to work as agricultural laborers, production laborers, or low-skilled service sector workers [18]. Given the limited opportunities in career progression for low-skilled workers, as mentioned earlier, the trend is likely to worsen labor market segmentation. Furthermore, the limited availability of workplace training, the limited scale of collective bargaining, and the limited use of productivity-based pay structures are likely to deteriorate this trend. [19]–[21]. Additionally, rural labor force participation is higher than urban labor force participation, and urban unemployment is higher than rural unemployment particularly [22]. If current trends continue, lower labor force participation and higher unemployment are possible future consequences.

Indonesia faces problems on the labor supply side as well as on the demand side, as stated by the Indonesian Ministry of Manpower [23]. To explicate, the major labor market issues in Indonesia are

¹ <https://www.feb.ui.ac.id/blog/2021/09/18/seri-kuliah-umum-mekk-feb-ui-peranan-program-kartu-prakerja-dalam-mendukung-pemulihan-ekonomi-di-masa-pandemi-covid-19/>



changes in the industrial structure, informal sector expansion, and limited employment opportunities. On the supply side, weaknesses in the labor force's education and skill profile have hampered productivity gains and a faster convergence with global productivity norms [18]. Whereas on the demand side, slower rates of economic growth and job creation have limited the expansion of high-quality jobs and slowed the pace of structural transformation [22], [24].

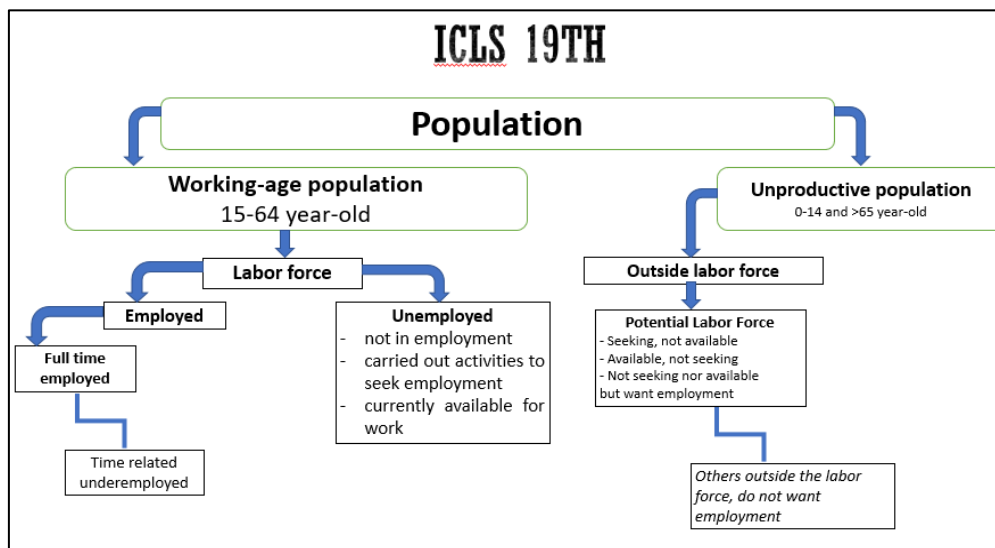
2.2. The economic and population structure change in Indonesia

During the 1970s, Indonesia maintained high economic growth, largely due to the rapid expansion of oil production and a sharp increase in oil prices after 1973. However, when oil prices began to fall after 1982, the Indonesian economy slowed. According to Hidalgo et al. [25], growth is likely to be volatile for countries that produce commodities at the periphery of "The Product Space", where natural resources are plentiful and commodities are produced with rudimentary technology. Following the oil windfalls, to address this issue, Indonesia underwent a structural transformation and became a more balanced, outward-oriented industrializing economy.

The growing economy and changing employment patterns have been closely linked to the structural transformation of the economy [26], [27]. The Indonesian population has shifted from agriculture to industry or services, from rural to urban areas, and from informal to formal employment. The rural population has declined significantly over the last three decades, falling from 74% in 1985 to 46% in 2014 [26]. Furthermore, as more labor leaves the agricultural sector and moves to the industrial and service sectors, more labor enters formal employment.

Indonesia's growth sectoral composition has shifted away from agriculture and toward industry and services, according to De Silva and Sumarto [28]. Looking back over the last two decades (1996–2015), Indonesia had a unique economic transition from agriculture to services, even before the industrial sector matured [26], [28]. This indicates that the manufacturing sector's productivity per worker had declined, as a drop in its share of Gross Domestic Product (GDP) was not accompanied by a drop in its share of employment.

2.3. The concept of youth unemployment



Source: ILO [5]

Figure 2. Concept of Labor Force Participation Using ICLS 19th

Several definitions are available for young people. However, first, it should be noted that although official statistics tend to focus on the group aged 15–24 (the United Nations (UN), International Labor Organization (ILO), and World Health Organization (WHO)), there is debate about the various definitions of "young people" [29]. Most of them describe the youth as people between the ages of 15



and 24 years (the UN, ILO, and WHO), while the *BPS-Statistics Indonesia* use the term “*pemuda*” to denote young people, which they consider to be Indonesian citizens aged 16 to 30 years, based on the Law No. 40 of 2009. Moreover, the paper uses the International Conference of Labor Statisticians (ICLS) 19 for defining unemployment (see Table 1). Unemployed people are people who do not have a job and are actively seeking a job, creating a business, or not searching for a job because they have already been accepted for a job but will not started it within a month. Having taken all definitions into consideration, the word *youth* in this study will delineate people aged between 15 and 30 years and the youth unemployment is stated as of young people aged 15 to 30 years who are without an occupation and are enthusiastically searching for a job/preparing a business/already have a job but will not started it within one month.

2.4. Factors related to youth unemployment

The magnitude and causes of unemployment have piqued the public’s interest, and the plight of unemployed graduates has been highlighted as a result. This has arisen due to not only the widespread prevalence of the problem but also the negative effects that the state of unemployment has on the individual [30]. One of the most important role transitions in young adulthood is entering the labor market. The absence of high school diplomas, poor reading skills, low intelligence quotient (IQ) scores, and insufficient family resources have all increased the probability of unemployment in the human capital area. [17].

The connections between individual-level variables—such as age, education and skill level, work-related experience, and employment period—and unemployment are not indisputable but differ across time and social frameworks [31]. Taken at a more general level, clearly, the educational resources and technical skills of a population can affect both economic growth over some time and the degree of adaptability of an economy to changing macro forces [32]. Education, in particular, has the potential to increase the number of workers in formal employment. This can boost productivity while also broadening the tax base of the country, potentially boosting overall employment and growth [33]. Education boosts a country’s competitiveness at the macro level [34]. A country with a well-educated workforce may be able to attract more competitive production phases with higher value added. Education can also help reduce unemployment and underemployment on a micro level (individual level). It can help workers improve their skills and knowledge, allowing them to use more advanced technologies [35], [36]. This could lead to increased market efficiency and, consequently, more long-term growth. The development of a more skilled labor force may also help avoid unit costs for lower skilled workers, thus attracting more foreign direct investment and higher wages. [33].

Life skills and financial services training includes the knowledge of how to save, take out a loan, start a business, and enter the labor force. Youth graduates are expected to have a greater ability to adapt to the job market and improve their overall academic performance. However, evidence on the effectiveness of training programs for those who are unemployed is mixed [37], [38]. In the literature, there are several examples of successful programs, both training programs and those targeting young people, that deliver positive results [39]. In Denmark, some studies suggest strong positive returns for some forms of training [40]. Furthermore, training programs have been more successful in middle- and low-income countries; this could be because the investments in these programs are especially beneficial to the most vulnerable population groups that they target, that is, low-skilled and low-income people [41]. Martin and Grubb [42] found consistently negative results for training programs for young people. Correspondingly, Kluve [43] and Card et al. [44] also reached similar conclusions that programs targeted at young people are less likely to have positive impacts. Furthermore, Betcherman et al. [45] suggested that training programs targeting young people were relatively less successful in more tightly regulated labor markets.

2.5. Empirical evidence on youth unemployment

Debates on youth unemployment have many pros and cons. These relate to the operational definition of youth unemployment, as well as its implications in labor market studies and dynamics. [29]. Most studies have studied the relationship between youth unemployment and macro-level data, such as inflation, Gross Regional Domestic Product (GRDP), aggregate demand, young people’s wages, the size of the



youth labor force, and minimum wages [12], [46]–[51], as aggregate data were easier to access than individual-level data. Nevertheless, some studies utilizing microeconomic variables, such as sex, marital status, skills, location, and education level have been performed [52]–[54].

Moreover, the previous studies mostly used multinomial logistic regression [52], [55]–[57], while others used logistic regression [58], [59]. Nonetheless, these had different temporal ranges and scopes. Several studies also used qualitative techniques and descriptive analysis [60]–[62]. Regarding Indonesia, most studies have focused on unemployment in general and used the macroeconomic variables [63]–[67]. Some studies have discussed youth unemployment and applied microeconomic variables; however, these only covered the provincial level and utilized outdated data [148][58], [59], [68].

3. Data and Methodology

This research uses the latest cross-sectional data from the 2019 National Labor Force Survey (NLFS) or *SAKERNAS* conducted by *BPS-Statistics Indonesia*. *BPS-Statistics Indonesia* conducts two *SAKERNAS* surveys each year, one in February and the other in August, to collect information on individual and household characteristics. However, these surveys differ in terms of the level of estimation provided: *SAKERNAS* February provides only province-level estimations, while *SAKERNAS* August provides up to district/city level estimations. These surveys employ internationally accepted definitions of labor market status (including unemployment) and provide information on a rich variety of topics concerning the relationship of respondents to the world of work.

This study will apply the sample of *SAKERNAS* August 2019. The sample consists of approximately 200,000 households in 34 provinces of Indonesia. The significant advantage of analyzing raw data was that we were able to investigate a variety of special subgroups that cannot be studied using the published summaries. Moreover, the study will pay special attention to youths who are not enrolled in school, as the problems and experiences of unemployed young people in school and out of school are distinct and must be studied separately.

Furthermore, the social and economic problems of unemployment may be more significant for those who are not in school than those who are. Moreover, the paper separately analyzes young men and women, as the problems and experiences of young men are likely to differ significantly from those of young women of the same age. Additionally, the study also distinguishes between the following regions: Java and non-Java. Even after including only out-of-school young people, the sample consists of 134,901 individuals. This is large enough to make statistically reliable estimates of unemployment among young people. However, this study could not access the combination of individual and household characteristics because the raw data does not provide the household identity number (*IDRUTA*); therefore, the individuals cannot be classified by household. This limitation means that the study can examine the relationship between only individual characteristics and youth unemployment.

3.1 Model Specification

Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables. Logistic regression is a special econometric model where the dependent variable is categorical and dichotomous (binary); in this case, it is unemployed (1) or working (0). Since the study used a binary qualitative or categorical variable, the utilization of logistic regression is considered as one of the most appropriate. The model used in this study is a modified model used by Miller [69], Andrews and Bradley [70], Bradbury, Garde and Vipond [71], Qayyum [53], and Msigwa and Kipesha [52], with the following specifications:

$$YUN_i = \alpha + \beta_1 EDUC_i + \beta_2 TRAIN_i + \gamma_j Z_{ij} + \varepsilon_i \quad (1)$$

Where,

YUN_i = youth's working status (unemployed = 1 and employed = 0)

$EDUC_i$ = educational attainment (dummy)

$TRAIN_i$ = training participation (yes = 1, otherwise = 0)

Z_{ij} = control variables (gender, marital status, household head, family member, urban, region)



Table 1 shows the one categorical dependent variable and eight independent variables. The independent variables are divided into two types: interest and control variables. Interest variables are independent variables that are the focus of this research, while control variables are an experimental element that is constant and unchanged throughout the investigation.

Table 1. List of Dependent and Independent Variables

Variable	Type	Description
Working status	Dependent variable	Employed(reference=0),and unemployed (=1)
Education	Interest Variable	No Education= not yet completed primary school; Primary Education= reference (elementary, junior high school, and equivalent); Secondary education= senior high, vocational high school, and equivalent; Tertiary education= higher education
Training	Interest variable	No(reference); Yes
Gender	Control variable	Female (reference); and Male
Marital Status	Control variable	Otherwise (reference); and Married;
Head of household	Control variable	No (reference), Yes
family member	Control variable	Number of family member
Urban	Control variable	Rural (reference=0) ; urban
Region	Control variable	Java; non-Java (reference=0) ^a

^a non-Java includes Sumatera, Bali and Nusa Tenggara, Sulawesi, Maluku, and Papua.

In this paper, the education variable is divided into four categories: no education, primary education, secondary education, and tertiary education. Primary education (contains people who have finished elementary, junior high school and equivalent) becomes benchmark because basic education in Indonesia is 12 years; however, mean years of schooling in Indonesia is 8.34 in Indonesia [72]. Hypothesis 2 argued that people with lower education will potentially become unemployment compared to people with higher education, primary education is chosen to become reference in this paper to support this. Meanwhile, hypothesis 2 proposed that people who participating in training will have more chance to get job opportunity than people who do not participate; therefore people with no experience attending training become benchmark in this study.

The model is easier to understand when expressed in terms of probabilities, i.e., odds ratios. An odds ratio greater than one indicates an increase in the probability of employment, while a value less than one indicates a decrease in the probability of employment. We obtained estimates of the relative odds (odds ratios) associated with a specific category of an interest covariate, such as using the following equation:

$$\text{Prob}(Y = 1 | x) = \exp \frac{\alpha + x\beta}{1 + \exp(\alpha + \beta x)} = \Lambda(x'\beta) \quad (2)$$

Here $\Lambda(\cdot)$ indicates the logistic cumulative distribution function.

The logit model will be transformed into a marginal effect value to determine the magnitude of the change in probability (P_i) caused by each change in the regressor. The parameters in the form of marginal effect in the logit model are as follows:

$$\frac{\partial F(x'\beta)}{\partial x} = \frac{e^z}{(1+e^z)^2} \beta_i \quad (3)$$

where $\partial F(x'\beta) = \partial y = \partial P$ is the change in y value or change in likelihood, ∂y is the change in x value, $z = \beta_0 + \beta_1 X_i$, and β_i is the coefficient of the explanatory variable i .



4. Result and Discussion

4.1 Descriptive statistics

Table 2 describes the independent variables of the model, including training participation, education attainment, gender, location, marital status, household head, and region. According to the August 2019 data of *SAKERNAS*, 89.14% of the youth are employed in both formal and informal employment sectors, while 10.86% are unemployed. Statistics show that 60.64% of the youth are male, and 39.36% are female. Moreover, 44.90% of the youth live in urban areas, and 55.10% live in rural areas. Figures on youth training participation indicate that only 10.04% of the youth undertook training, while 89.96% did not.

Table 2. Summary statistics of youth (15–30 years old)

Variables	Frequency	Percentage	
Working status	Employed	120,242	89.13
	Unemployed	14,659	10.87
Gender	Female	53,105	39.37
	Male	81,796	60.63
Training participation	No	121,354	89.96
	Yes	13,547	10.04
Educational Attainment	No Education	9,222	6.84
	Primary Education	45,034	33.38
	Secondary Education	60,357	44.74
	Tertiary Education	20,288	15.04
Residence	Rural	74,335	55.10
	Urban	60,566	44.90
Marital Status	Single	82,808	61.41
	Married	49,832	36.96
	Divorced	1,905	1.41
	Widowed	293	0.22
Household head	No	115,269	85.45
	Yes	19,632	14.55
Region*	Non-Java	95,645	70.90
	Java	39,256	29.10

*Note: The individual sample is smaller in Java Island than outside Java Island; nevertheless, the *SAKERNAS* August 2019 provides weights (WEIGHTR_SP) proportionate with the sample; this will provide comparative estimations.

Furthermore, the education level indicates that 6.84% of youth did not complete primary education, 33.38% completed primary education, 44.75% completed secondary education, and only 15.3% completed higher education. Moreover, single (61.41%) is the highest percentage in terms of marital status, followed by married (36.96%), divorced (1.41%), and widowed (0.22%). Meanwhile, young people who serve as the head of household accounted for 14.56%.

**Table 3.** The distribution of youth and youth unemployment by island, 2019.

Island	Youth	Percent of youth	Youth unemployment	Percent of youth unemployment
Sumatera	9,062,259	22.22	1,017,336	20.82
Java	22,605,189	55.42	3,047,782	62.36
Bali and Nusa Tenggara	2,343,583	5.75	141,010	2.89
Kalimantan	2,554,782	6.26	257,484	5.27
Sulawesi	3,004,654	7.37	297,203	6.08
Maluku and Papua	1,220,785	2.99	126,354	2.59
Total	40,791,252	100.00	4,887,169	100.00

Table 3 depicts the youth and youth unemployment distribution by island. In non-Java Island, North Sumatra and South Sulawesi become the province where the most of young people live comprising of 5.92% and 3.30%. The weighted sample indicates that 55.42% of young people live in Java Island, while the rest live outside Java Island according to Table 3. Moreover, based on Table 3, the percentage of youth unemployment in Java, Bali, and Nusa Tenggara Island (61.17%) is higher than outside these islands (38.83%).

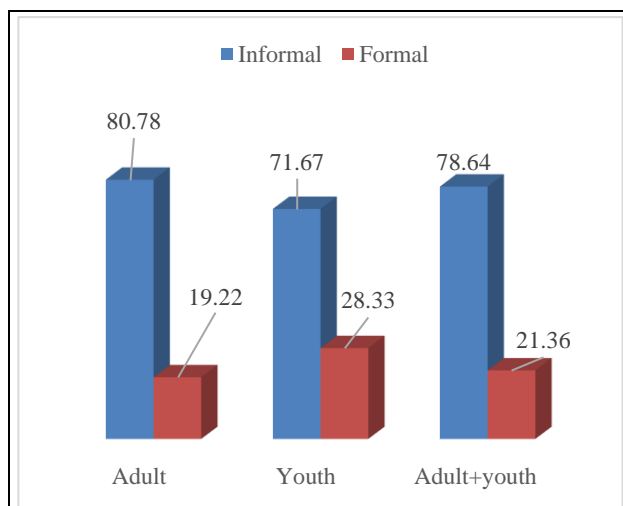
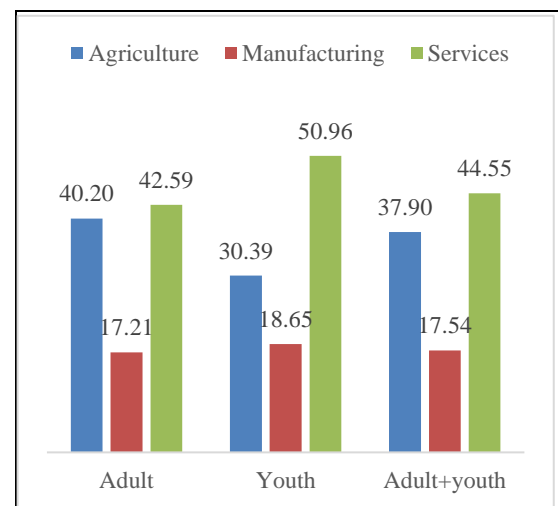
**Figure 3.1.** Youth employment status**Figure 3.2.** Youth employment by sector

Figure 3 demonstrates that typically, young Indonesian workers occupy a place in the informal economy. Youth aged 15–24 years old accounted for 76.16%, and 66.86% of young people in the 25–29 year age group were informal employees. Moreover, Figure 4 indicates that several young employees are engaged in the service sector, followed by the manufacturing sector, while the least attractive sector for young workers is the agriculture sector. The dominance of the service sector in both age groups shows that informal workers among the young are uncommon. In most cases, the service sector's association with the informal economy shows that most young workers are employed in the service sector. A recent study reveals 61.2% of the global workforce aged 15 and above are in the informal economy, and 47.2% of all employment in the service industries strengthen this point [73].

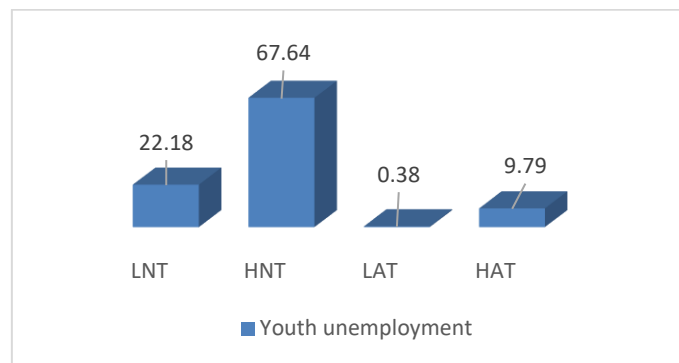


Figure 4. Training Participation and Education Level of Youth Unemployment

Figure 4 illustrates that among young people who unemployed, 22.18% have lower education (secondary education and below) and never attend training, 67.64% have higher education (college degree and higher) and not undertaken training, 0.38% have lower education and did not participate in training, and 9.79% have higher education and participated in training. Overall, young people who have not participate in training given their education will more possible to be unemployed than young people who attend training.

4.2 Logistic regression

To deal with the dummy variables, this study used logistic regression to estimate the various categories of variables. The marginal effect for each variable was calculated to see how adding a unit to each variable affects unemployment for three different profiles: personal, demographic, and educational. The marginal effects of the independent variables that will help formulate the unemployment correlation are represented by the results estimated in Table 4.

Table 4 includes all explanatory variables. It analyzes the role of each variable in differentiating unemployed youth from employed youth. Two interest variables, training participation and educational attainment, and all control variables (gender, marital status, location, family member, household head, and region) are statistically significant at $p\text{-value} = 0.01$, which indicates that all variables in the model correlate with the probability of young people becoming unemployed. Moreover, it shows that the control variables that increase the probability of youth becoming unemployed are residence, region, and the number of family members. Meanwhile, the education level yields unique results: a young person who did not finish primary education is less likely to be unemployed over being employed compared to the reference (primary education), while youth with higher education yields the opposite result. It is in line with the outcomes of Pratama et al. [74], that a positive correlation exists between the level of education and young unemployment case. However, other variables such as gender, marital status, household head, and training decreased the probability of being unemployed compared to the each reference base.

The variables will be analyzed more deeply based on results of the marginal effects. Table 4 explains that, initially, if young people participate in training, the chance of being unemployed decreases by 1.01% than young men who do not participate in training. This finding is in line with Díaz et al. [75] and Weller [76] who discovered that training programs decrease the possibility of being unemployed. This implies that training or preparation either in the formal or informal sector is needed for the young to enter the working world. Moreover, this can make the school-to-work transition smoother and easier for graduates.

**Table 4.** The Results of odds ratio and marginal effect

Variable	Coefficient	Marginal Effect (dy/dx) ^b
noeduc	-0.355*** ^a	-0.023
hischool	0.0782***	0.068
vocedu	0.768***	0.070
terud	0.564***	0.049
train	-0.136***	-0.010
gender	-0.103***	-0.009
mar	-1.269***	-0.089
urban	0.189***	0.014
fam	0.03***	0.002
hh	-0.937***	-0.055
java	0.251***	0.019
Constant	-2.426***	
Number of observations		134,901
Pseudo r-squared		0.087
Prob > chi2		0.000
Marginal effects after logistic: $y = \text{Pr}(\text{unemploy})$ (predict)		0.0798

^a *** $p < .01$, ** $p < .05$, * $p < .1$;

^b dy/dx is for the discrete change of the dummy variable from 0 to 1

Moreover, young people who have not completed primary education do not possess any skills required in the job market, and their chance of being unemployed decreases by 2.3% compared to people who have completed primary education; hence, they engage in informal employment. The reason for their involvement in the informal sector is that, while many young people in developing countries will continue to work in the informal economy, informalization is likely to increase as more jobs shift to gig and casual labor [77], [78]. This is based on the assumption that with limited skills, low prospects in the formal economy, and high rewards that are disproportionate to the skills required, informal jobs remain as an easy entry option for many people at the bottom of the economic ladder, many of whom are young adults with low education [79].

For the skilled youth, market competition for a job, their working experiences, and their preferences for formal employment make them more likely to be unemployed over being employed compared to young people who finished primary education. The likelihood of being unemployed would increase by 6.8%, 7%, and 4.9% for high school, vocational education, and higher education alumni, respectively over primary education. It is interesting how the higher a person's education level, the higher is their possibility of staying jobless. It is consistent with studies highlighting the high unemployment rates for better educated youth in comparison with youth with lower levels of educational in developing economies; this also mirrors the propensity of well-educated youth to wait until an appropriate job opportunity arises [80], [81]. Nevertheless, this finding also contradicts some other studies, which found that a person's educational level positively influences the likelihood of them finding a job [82]–[84].

Another cause is employers do not positively approach youth employment, owing to their inexperience at work and the imperfect knowledge of young applicants [85]. They prefer experienced workers, which reduce employment opportunities for new graduates and also increases unemployment duration [86]. Moreover, the incompatibility between the competencies of workers and the labor market is also a reason for Indonesia's high youth unemployment. To illustrate, the current technical vocational education and training (TVET) system which called *Sekolah Menengah Kejuruan (SMK)* in Indonesia faces a fundamental mismatch between the supply and demand of skills, and the relevance and applicability of practical skills taught in TVET institutions [87]. TVET graduates in Indonesia, who should be ready for work, experience difficulties entering the labor market than general high school graduates due to the lack of flexibility to work in any sector besides their specialization.

Moreover, the results of marginal effect also shows that young men are 0.9 % less likely to be



unemployed compared to young women. Several studies found a similar result, that young women have a higher probability of unemployment than young men [52], [84], [88], which happens particularly in emerging countries [89]. Education is the most common activity outside of the labor force for men, whereas housework is the most common activity for women, with female participation in education being much lower than male participation. This adds to the picture of young women being disadvantaged in terms of both the quantity and quality of job opportunities available to them. The findings also suggest that married people have less probability of being unemployed compared to unmarried people. They also show that marriage reduces the possibility of young people being unemployed by 8.9%. Msigwa [52] and Oancea [83] also produced similar outcomes. This is because married youth have more responsibilities and have to care for their families, which requires them to work, whereas most single youth rely on their parents and are thus less motivated to work.

Additionally, the number of family members (*fam*) also increases the probability of a young person being unemployed. A bigger family size would increase the chances of young people being unemployed by around 0.2% compared to smaller size family. The cost of being unemployed may be lower for those with a big family, as some of them may support the unemployed individual. Furthermore, usually, having a big family can increase an unemployed person's dependency on other working family members than in smaller-sized family. Youth who still live with their parents and possess a big family have a higher chance of becoming unemployed than those who live separately from their parents, as the former are more reliant on their family. This figure would become worse if they had completed higher education, because they would not want to lower their expectations about getting their dream job. They would be very meticulous when applying for a job or accepting a job offer, because of their family safety net. Nonetheless, this study could not access the household characteristics of unemployed youth to determine the relation between the number of employed household members and the possibility of unemployment of the young people residing in this household.

An interesting finding is that youth who live in urban areas more likely to become unemployed rather than young people living in rural areas. Youth who live in urban areas are more prone to unemployment by 1.4% compared to youth who live in rural areas. Similarly, Msigwa et al. [52] and Mpanju et al. [90] discovered that a youth who lives in an urban area is more likely to be unemployed and especially young graduates [91]. Furthermore, young people who live in Java Island is more tend to be unemployed by 1.9% compared to youth who live outside Java Island. Java as the most populous island in Indonesia makes the competition for occupation here is tougher than in other areas. Although Java has the highest rate of job vacancies at around 86.4% [1], the number of unemployed people in Java is also the highest. This is probably because the vacant jobs in Java need more experience and skills; thus, young people cannot enter the job market. Non-Java Island has more opportunities for young people to start their career, perhaps because the qualification of workers is lower than in Java.

5. Conclusion and Policy Implications

By applying logistic regression model to observe the determinants of the probability of youth unemployment, the current study aimed to enhance the understanding of the trends in youth unemployment in Indonesia. To this end, it employed quite detailed micro-level data from the *SAKERNAS* of August 2019. The objective of the study was to investigate the relationship of training participation and educational attainment with the likelihood of people experiencing youth unemployment and suggest a path forward for resolving the issue. From the findings, the study concludes that the two main variables training and education are significant factors in explaining the difference in youth unemployment status in Indonesia.

A negative relationship was discovered between training and youth unemployment in Indonesia. Training is usually considered a primary factor for reducing youth unemployment in Indonesia. Furthermore, the education factor yields quite unexpected results. The hypothesis suggests that people who have better education would be more likely to be employed rather than who finished primary education; however, the opposite was discovered to be true: Young people who are more educated tend to be unemployed. It is interesting that these educated graduates choose to be unemployed instead of getting a job or starting a business. Perhaps, this is because there is a problem in the supply side, such as mismatch in the skills required for a job and the skills available, or in the demand side, such as severe



competition in the labor market. For people with a college degree or higher, one reason could be that they wish for a job with an appropriate salary and in the formal sector. Meanwhile, people with TVET degrees face more difficulties entering the labor market than high school graduates, as they lack the flexibility to work in any sector besides their specialization. Moreover, as control variables, individual characteristics also contribute to explaining the probability of young people experiencing unemployment. One prominent result is marital status. Married youth tend to be employed than single people, probably because marriage brings additional responsibilities that single youth do not have to bear.

This study has some limitations. First, to determine a causality between the variables and youth unemployment, especially for the training and education attainment variables, longitudinal data should be investigated more than cross-sectional data to assess the effects of training participation and education in the medium and long terms. The utilization of a panel data model with a longer period of data probably can capture this causality rather than cross-sectional data.

Furthermore, to enrich the analysis, macroeconomic data and household characteristics should be included by combining other data, such as those of the IFLS or National Socio-Economic Survey (SUSENAS), with the SAKERNAS data. More comprehensive analyses should be performed on to understand how a bigger family size can increase the probability of someone being unemployed, such as by applying the luxury unemployment hypothesis. The luxury unemployment hypothesis would hold if the majority of unemployed youth came from wealthy families and spent much longer looking for suitable work, whereas poorer job seekers would settle for the first job available [92].

This study has some policy implications for the government, which can be implemented to reduce the youth unemployment. Programs, policies, and products geared toward investing in youth may help countries currently experiencing a youth bulge to optimize their demographic dividend. The government should increase the quality of education, especially for young people in the 15–19 years old age group. As per the findings, the problem of youth unemployment is significant for people with high school and vocational school degrees and much higher than for people who have undergone tertiary education. To overcome this situation, the Ministry of Education, Ministry of Labor, and businesses should coordinate to match labor market needs with the curriculum of these education levels. Even though the magnitude of the marginal effect of training variable is moderately small, the government should understand that young people need a school-to-work transition training program to adequately develop their skills before entering the labor market for the first time. Therefore, the link between education, training, and the job market should be improved through social discussion on the skills mismatch and standardization of requirements in response to labor market needs, enhanced quality of the TVET, apprenticeships, other work experience schemes, and work-based learning.



5. Appendix

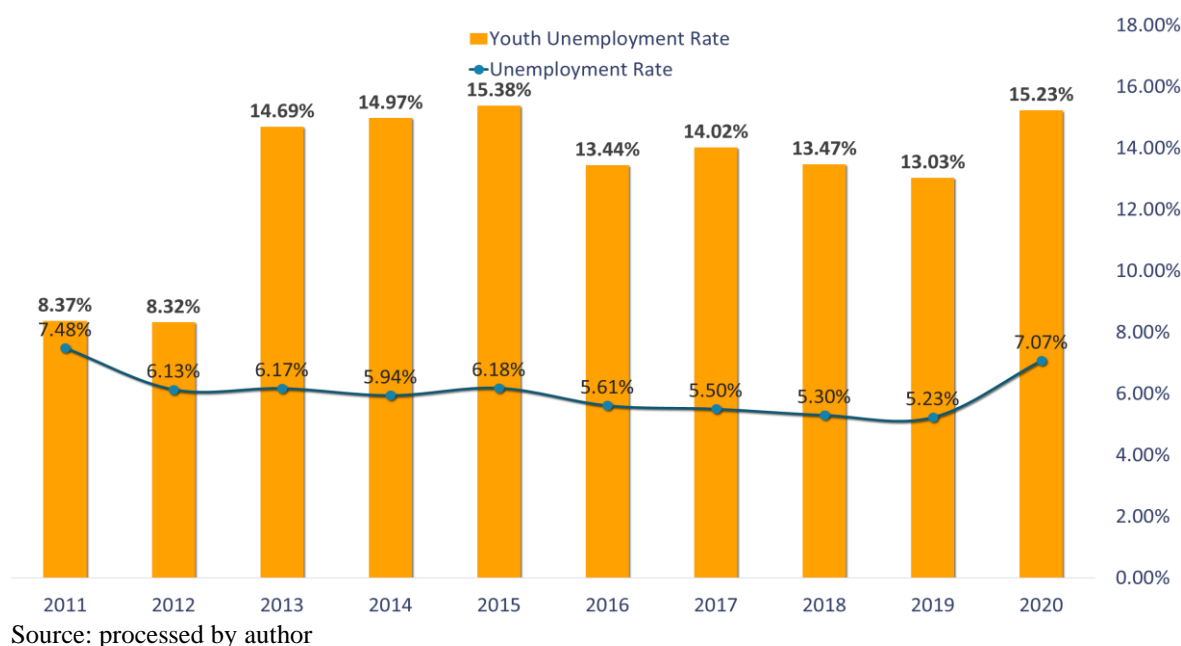


Figure 1. Open and Youth Unemployment Rate in Indonesia (2011-2020)

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