

## Unemployment Duration of Educated Workers in the Provinces of Indonesia: A Cross Sectional Analysis From Labor Supply Perspectives

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### Article's history:

Received 5<sup>th</sup> January, 2020; Received in revised form 28<sup>th</sup> January, 2020; Accepted 29<sup>th</sup> February, 2020;  
Published 30<sup>th</sup> March, 2020. All rights reserved to the Publishing House.

### Suggested citation:

Jolianis, Adrimas, Bachtiar, N., Muharja, F. 2020. Unemployment duration of educated workers in the Provinces of Indonesia: A cross sectional analysis from labor supply perspectives. *Journal of Applied Economic Sciences*, Volume XV, Spring, 1(67): 97-105. DOI: [https://doi.org/10.14505/jaes.v15.1\(67\).09](https://doi.org/10.14505/jaes.v15.1(67).09)

### Abstract:

This study aims to analyze the factors that affect the unemployment duration of educated workers in 34 provinces in Indonesia using National Labor Force Survey data. The research model was developed from the job search theory using dummy variables tested by logistic regression analysis. This study found that in general educated unemployment in Indonesia experienced unemployment duration of 0-3 months. The unemployment duration of educated workers is determined by the level of education, job training, work experience, age, marital status, position in the household and residential area, while the gender do not affect the duration of unemployment.

**Keywords:** unemployment duration; educated workers; job search theory.

**JEL Classification:** J01; J12; J22; J16; J64.

### Introduction

The characteristic of unemployment in Indonesia is the high number of educated unemployed. Educated unemployment in 2016 has decreased from the previous year which is from 36.91% to 30.74% but in 2017 the number of educated unemployed increased again to 31.76% consisting of 11.41% graduated from vocational school, 8.29% graduated from high school, 6.88% graduated from the academy and 5.18% graduated from the university. In 2018 the total educated unemployment was 31.10% consisting of 11.24% graduated from a vocational school, 7.95% graduated from senior high school, 6.02% graduated from academy and 5.89% graduated from university (BPS 2019).

Based on the data it appears that there is a phenomenon, where the labor force graduates of vocational high schools who have been prepared to enter the labor market but the percentage of unemployment rates are higher than those of general secondary school graduates who are not prepared to enter the labor market. The next phenomenon is that there are still many unemployed college graduates. This certainly will be a serious problem for the world of education in Indonesia because of the high level of education there is no guarantee for

them to get a job. This causes the rate of return obtained by the educated workforce does not match those sacrificed to complete education.

The high number of educated unemployed is a serious problem for Indonesia and real efforts are needed to get out of this problem and of course a study is needed to find out what factors can influence the duration of unemployed educated workers. This study examines the unemployment duration of educated workers in terms of labor supply consisting of levels of education, job training, work experience, age, gender, marital status, position in the household and residential area

## 1. Literature review

An educated unemployment is someone belonging to the labor force who is actively looking for work but has not yet found a job with a minimum level of senior high school education/equivalent and above (Mankiw 2010, Elfindri and Bachtiar 2004, Adrimas 2012, BPS 2019). In the context of changing the structure of the labor market, unemployment can be linked to the expansion of education. There is an interesting thing in this study, namely the existence of a paradigm of unemployment of educated labor. Formal education is very instrumental and is needed to increase individual capacity so that education is considered an investment in human capital in the industry (Woodhall and Psacharopoulos 1997).

There are several views on the problem of unemployment which is a friction in the matching process between job seekers and available jobs. In microanalysis, unemployment is associated with the duration of job search or duration of unemployment. According to Mankiw (2010) the duration of unemployment is the time needed by the workforce to find and get a job that best matches the expertise and tastes of the workforce. Furthermore, Khan and Yousef (2013) explained that the duration of unemployment is the waiting period for someone to get a job after completing their last education.

The duration of unemployment is a description of the problem of the unemployment phenomenon that has never been resolved. One of the factors that can justify this condition is the search friction that occurs in the labor market. The existence of search friction in the job market will result in unemployment duration for job seekers who always need time to get a job. Analysis of labor market friction which causes the duration of unemployment is theoretically explained in the discipline of labor economics in the context of individual labor supply. The analysis of its application to the labor market was pioneered by Stigler (1961, 1962) and further developed by Diamond (1982), Mortensen (1970, 1977, 1984, 1986), and Pissarides (1982). This analysis model is better known as the search theory. This theory has undergone many developments and has become one of the well-established theories in the discipline of labor economics. Mankiw (2010) mentioned that job training programs will be able to help people find work. According to McConnel (1999), an experienced workforce is more skilled in completing work. The work experience will make it easier for someone to get a job so that the duration of unemployment will be short (Ashenfelter and Ham 1979).

Foley (1997) study of the determinants of unemployment duration at the beginning of an economic transition, found that:

- women tend to be unemployed longer than men and married women experience much longer periods of unemployment compared to married men;
- the younger workforce will be unemployed longer than the elderly;
- married workers are found to experience a much shorter unemployment period compared to unmarried people;
- workers with higher education will not be unemployed longer than those who have secondary education or even elementary school;
- low local labor market demand will extend the duration of unemployment;
- individuals who live in the area will experience a higher duration of unemployment than those who live in the city.

Research Grogan and Berg (2001) which uses longitudinal survey data to assess the factors that affect the duration of unemployment in Russia. This study found that personal characteristics (gender, level of education, and area of residence) had a significant influence on the duration of unemployment. Long duration of unemployment occurs in unmarried men, individuals with low education, and individuals who live in rural areas.

Tansel and Tasci (2004) use the results of the Household Labor Force Survey to assess the duration or period of unemployment. The results of this study indicate that:

- women experience a higher duration of unemployment than men;
- young people tend to be unemployed longer than those who are not young;
- education has a negative relationship with the duration of unemployment, those who have higher education tend to have a shorter duration of unemployment compared to those with less education;
- the effect of the local unemployment rate is positive on the duration of unemployment, the higher the local unemployment rate will certainly extend the duration of the unemployed workforce in the area.

Theodossiou and Zarotiadis (2010) looks at the distribution of experience of workers and unemployed people in less developed regions in Greece (northwestern Epirus), where unemployment has a detrimental impact on local labor. This study uses a dataset obtained through a questionnaire created specifically to assist local authorities in implementing regional labor market policy projects. Found that the duration of unemployment hurt the duration of work at present and vice versa, which is known as the "unemployment trap" phenomenon. Also, personal characteristics and socioeconomic conditions are the cause of unemployed people. Workers over the age of 45, women, sales employees and other service jobs, face a much shorter work period so that they have a longer duration of unemployment.

Pasay and Indrayanti (2012) examined unemployment in Indonesia, length of time seeking work, and reservation of educated workers. This research found that the unemployment rate of educated workers continues to increase every year. The average length of time seeking work reaches 11 months. The length of time seeking work for highly educated people is longer than for those with low education. The desired minimum wage with social, demographic and regional characteristics of a highly educated workforce is greater than the others

Khan and Yousef's (2013) research on analyzing the determinants of unemployment as a first-time job seeker, by taking primary data from all working individuals or entrepreneurs aged 20-35 years. The dependent variable is the duration of unemployment. The independent variable is the level of education (professional and general), training, age, salary, gender, marital status, position in the household. The research findings that professional degree holders have a shorter duration of unemployment, but in the case of general education, holders of higher education degrees experience a shorter duration of unemployment than their counterparts with lower degree holders. Job training, marital status, high salaries, household heads, and household size reduce the duration of unemployment.

Skenderi and Uka (2015) examine about explaining that the type of unemployment that occurs in Kosovo is frictional unemployment caused not by structural changes even though the Kosovo economy goes through a severe transition. The fact is found that workers generally work in sectors that do not have "entry barriers". This study also explains that the workforce that has a high education has a much higher job opportunity than those who have low education. Furthermore, it was found that seasonal workers get higher compensation, seasonal unemployment is present because of the large number of employees in agriculture, trade, and construction.

Perazzi *et al.* (2017) examined the duration of unemployment of unemployed people in the Bolivarian Republic of Venezuela. This study analyzes the average duration of unemployment. The results show that long-term unemployment encourages some people not to look for work again (stop being part of the labor market) and others to move to work in the informal sector.

Cheron and Terriau (2018) examine the impact or externality of the training on the skills of the workforce both those who are looking for work and those who are already working by considering the age factor. This research found that the impact of training externalities for the workforce is: improving work skills, making jobs easier; creating jobs. All of these effects apply to all age groups both old and young, only training is more effective given to the younger workforce than older ones.

Research conducted by Blanco and Preugschat (2018) examined the impact of ranking based on the duration of unemployment. This study builds theory based on recruitment behavior in companies that make calls to applicants to be interviewed and offer a reduction in wages. This study divides the two types of applicants, namely applicants who have never worked and applicants who quit their old jobs. This research found that in general companies prefer to accept applicants who have never worked and have a short duration of unemployment.

Baitenizov, *et al.* (2018) discuss some aspects of self-employment and the influence of several social and economic factors on this labor phenomenon, including GDP, the level of unemployment, the level of education, and the level of service share in a national economy. This research states that the predicted level of self-employment in Kazakhstan corresponds to the European trend of decreasing the level of self-employment,

however in Kazakhstan this decrease is more noticeable due to the higher level of self-employment compared to the EU countries and the global trend of lowering agricultural self-employment. Tvrdon (2019) examines the labor market performance and the Beveridge curve: The case of Visegrad group countries. Empirical results showed shifts of the Beveridge curve to the left and upward (the job vacancy rate was increasing, while the unemployment rate was declining), which is peculiar to the prosperity phase from 2014Q1 to 2018Q3.

The Sansale, *et al.* (2019) study examines the role of personality in determining the duration of unemployment for the young labor force in the United States. Using a competing risk model, this study found that when individuals are faced with unemployment, young people are significantly more likely to find work rather than continuing education. People who have high neuroticism at a young age are more likely to choose to work than continuing education. The implication of this research is the need for work education and training programs for the young workforce to have skills to enter the workforce. This study provides two important contributions to the literature on the importance of the role of personality in determining the duration of unemployment.

## 2. Methodology

This type of research is *ex post facto* conducted in 34 provinces in Indonesia with a total sample of 2,464 educated unemployed people. This study uses secondary data in the form of Indonesian National Labor Force Survey data for the August 2017 period obtained from the Indonesian Central Statistics Agency. The dependent variable is the duration of unemployment while the independent variable is the level of education, work training, work experience, age, sex, marital status, position in the household and residential area. This research model was developed from job search theory which is tested by logistic regression because it uses dummy variables. The operational definitions of the research variables are explained in the following table.

Table 1. Operational definitions of research variables

| No | Variable                 | Symbol | Defenition  | Measurement  |
|----|--------------------------|--------|---|--|
| 1  | Duration of Unemployment | Du     | The duration of the workforce unemployed who has a high school education/equivalent and above | 1 = Unemployed >3 months (Long)<br>0 = Unemployed 0-3 months (Short) |
| 2  | Level of education       | Edu    | The last formal level of education is the educated workforce                                  | 1 = SMA/equivalent<br>0 = College                                    |
| 3  | Work training            | Wt     | Job training that has been attended by educated and certified workers                         | 1 = Never attended job training<br>0 = Ever                          |
| 4  | Work experience          | Exp    | Work experience possessed by an educated workforce  | 1 = Inexperienced<br>0 = Experienced                                 |
| 5  | Age                      | Age    | Age of educated workforce   | 1 = 15-24 years (young)<br>0 = > 24 years (old)                      |
| 6  | Gender                   | Gend   | The sex of the educated workforce   | 1 = Female<br>0 = Male   |
| 7  | Marital status           | Ms     | Marital status of an educated workforce   | 1 = Single<br>0 = Married  |
| 8  | Position in haushold     | Ph     | Position of educated workforce in the household   | 1 = Not head of household<br>0 = Head of household                   |
| 9  | Residence area           | Ra     | The area where the educated workforce lives is settled  | 1 = Village<br>0 = City  |

## 3. Result and discussion

This research was conducted in 34 provinces in Indonesia. Educated workers generally experience unemployment duration of 0-3 months (short) as much as 88.03% and those unemployed over 3 months (long) are as much as 11.97%. In general, 70.33% of high school graduates/equivalent and 29.67% of tertiary graduates and 79.13% had never attended job training and only 20.87% had attended job training. This data shows that generally educated unemployed do not yet have sufficient access to take part in job training ore.

Based on work experience, it is known that the majority do not have work experience, namely 81.13% and only 18.87% have work experience. This data indicates that in general, the workforce who become educated unemployed are those who have just finished their education so that they do not have work experience. The variable labor supply crosstab with unemployed duration is as follows.

Table 2. Crosstab variable labor supply with unemployed duration

| No    | Characteristics      | Information                 | Duration of Unemployment (%) |            | Total (%) |
|-------|----------------------|-----------------------------|------------------------------|------------|-----------|
|       |                      |                             | 0-3 Months                   | > 3 Months |           |
| 1     | Level of education   | College                     | 28.81                        | 0.85       | 29.67     |
|       |                      | SMA/equivalent              | 59.21                        | 11.12      | 70.33     |
| 2     | Work training        | Ever                        | 33.64                        | 1.99       | 35.63     |
|       |                      | Never attended job training | 54.38                        | 9.98       | 64.37     |
| 3     | Work experience      | Experienced                 | 37.82                        | 5.52       | 43.34     |
|       |                      | Inexperienced               | 50.20                        | 6.45       | 56.66     |
| 4     | Age                  | Old                         | 79.42                        | 8.93       | 88.35     |
|       |                      | Young                       | 8.60                         | 3.04       | 11.65     |
| 5     | Gender               | Male                        | 53.21                        | 7.14       | 60.35     |
|       |                      | Female                      | 34.82                        | 4.83       | 39.65     |
| 6     | Marital status       | Married                     | 75.57                        | 8.52       | 84.09     |
|       |                      | Single                      | 12.46                        | 3.45       | 15.91     |
| 7     | Position in haushold | Head of household           | 43.83                        | 4.10       | 47.93     |
|       |                      | Not hhead of household      | 44.20                        | 7.87       | 52.07     |
| 8     | Residence area       | City                        | 58.00                        | 5.52       | 63.51     |
|       |                      | Village                     | 30.03                        | 6.45       | 36.49     |
| Total |                      |                             | 88.03                        | 11.97      | 100       |

Source: Processed data output, 2019

Based on the age group, it is dominated by the young age group as much as 75.53% and old as much as 24.47%. This data also shows educated unemployed who have 0-3 months unemployment duration are young age group while those who have unemployment duration more than 3 months are educated unemployment who are in the old category. Based on gender data it is known that in general educated unemployment is male as much as 53.23% and women as much as 46.77%.

Based on marital status, generally unmarried 69.37% and 30.63% married. In general, educated unemployment is not towards households which is as much as 82.91% and domiciled as heads of households is as much as 17.09%. This data shows that there are still many household heads who are classified as educated unemployed. Furthermore, it was also seen that both households and non-household heads generally had an unemployment duration of 0-3 months.

Based on the region where educated unemployed people live, it is known that in general educated unemployed people in Indonesia generally live in rural areas as many as 50.85% and those who live in urban areas are 49.15%. This data shows that in general educated unemployed in Indonesia are generally those who live in rural areas. Based on residential data, it is known that in general educated unemployed people live in rural areas with a duration of unemployment between 0-3 months. The duration of unemployment is more than 3 months, generally residing in urban areas. This data shows that educated unemployed stay longer in the city than those who live in the village

Then the data are analyzed by logistic regression to see the probability of the unemployed duration of the educated workforce, as presented in the following tablet

Table 3. Estimated model of unemployment duration

| No | Variable | Coef.  | t-value | Prob. | Odd Ratio | Marginal Effect |
|----|----------|--------|---------|-------|-----------|-----------------|
| 1  | Edu      | 1.463  | 6.12    | 0.000 | 4.317     | 0.1407926       |
| 2  | Wt       | 0.711  | 4.16    | 0.000 | 2.036     | 0.0684199       |
| 3  | Exp      | -0.280 | -2.10   | 0.036 | 0.756     | -0.0269885      |
| 4  | Age      | 0.557  | 3.05    | 0.002 | 1.746     | 0.0536573       |
| 5  | Gend     | 0.089  | 0.56    | 0.577 | 1.093     | 0.0085931       |
| 6  | Ms       | 0.435  | 2.47    | 0.013 | 1.545     | 0.0418468       |
| 7  | Ph       | 0.389  | 2.28    | 0.023 | 1.476     | 0.0374514       |
| 8  | Ra       | 0.684  | 5.23    | 0.000 | 1.982     | 0.0658492       |
| 9  | Constant | -4.320 | -15.72  | 0.000 |           |                 |

Note: Pearson chi2 (172) = 313.84 Prob > chi2 = 0.00

Source: Processed data output, 2019

Based on the results of data analysis it is known that the Pearson chi-square value is 313.84 with a probability value of 0.00. Thus, it can be stated that the logistic regression model used is sufficient to be able to explain the data/match, in other words, the logistic regression model is suitable for further analysis because there is no real difference between the predicted classification and the observed classification.

The level of education has a significant positive effect on the duration of unemployment. Educated workers graduating from senior high school/equivalent have a long duration of unemployment probability is 14.07% higher than college graduates. The odd ratio value of 4.32 means that the duration of unemployment is a senior high school/equivalent degree 4.32 times longer than a college graduate. This proves that senior high school/equivalent graduates will be unemployed longer than college graduates because of the higher the level of education, the shorter the duration of unemployment. The findings of this study are supported by the findings of Foley (1997) stating workers with higher education will not be unemployed longer than those who have secondary education or even elementary school. Kettunen (1997) states that people who are unemployed and have an education level of around 13-14 years are highly likely to be able to return to work and the duration of unemployment is short. Takii (1997) argues that the level of education of the workforce determines the size of the workforce be accepted by companies, where the workforce that has a high education will have a high chance of being accepted to work and vice versa. Grogan and Berg (2001) found that a long duration of unemployment occurred in individuals with low education. Tansel and Tasci (2004) state that the labor force with higher education tends to have a shorter duration of unemployment compared to those with less education. Khan and Yousef (2013) found that holders of higher education degrees experienced shorter unemployment durations than their fellow holders of lower degrees. Skenderi and Uka (2015) found that the workforce who had a high education had a much higher job opportunity than those who had low education. However, the findings of this study are different from the findings of Pasay and Indrayanti's (2012) research which found that the length of time for seeking work for highly educated people is longer than for those with low education.

Job training has a significant positive effect on the duration of unemployment. Educated workers who have never attended the training have a longer duration of the probability of unemployment being 6.84% higher than those who have attended job training. The odd ratio value of 2.04 means that the duration of unemployment who has never attended job training is longer than 2.04 times than those who have attended job training. This shows that job training plays a role in determining how long or short a person becomes unemployed, whereby following job training for educated educators, it will shorten the duration of unemployment. The research findings are supported by research findings by Khan and Yousef (2013) who found that the existence of job training would reduce the duration of a person's unemployment. Cheron and Terriau (2018) stated the impact of training externalities for the workforce is to improve work skills, make it easier to find work, create jobs. Sansale *et al.* (2019) stated the need for work education and training programs for a young workforce to have skills to enter the workforce.

Work experience has a significant negative effect on the duration of unemployment. Educated workers who have work experience have a longer duration of unemployment probability of 2.70% higher than those without work experience. The odd ratio value of 0.76 means that the duration of the unemployed who has work experience is 0.76 times longer than those who did not have job training. If you have work experience, you will experience a longer duration of unemployment compared to those without work experience. This finding indicates that recruitment companies prefer to accept those who do not have work experience compared to experienced ones. The findings of this study are in line with the findings of Blanco and Preugschat (2018) who find that in general companies prefer to accept applicants who have never worked. But contrary to the findings of McConnel (1999) who found that experienced workers are more skilled in completing work. The work experience will make it easier for someone to get a job so that the duration (Ashenfelter and Ham 1979).

Age has a significant positive effect on the duration of unemployment. The probability of a young educated workforce experiencing a longer duration of unemployment is 5.37% higher than that of the elderly. The odd ratio value of 1.75 means that the duration of unemployed youth is 1.75 times longer than the elderly. This shows that age is a factor that determines the duration of unemployed educated workers. Young workers tend to be unemployed longer than older workers. This condition occurs because in general educated workers who are young are more likely to look for work that is more suited to their abilities and skills so that they will pick and choose jobs that will certainly display their unemployment duration. The findings of this study are in line with the findings of Foley (1997) which states that a young workforce will be unemployed longer than the elderly. Tansel and Tasci (2004) stated that young people tend to be unemployed longer than those who are not young. Khan and Yousef (2013) state that those who are young tend to be unemployed longer than those who are old.

However, other studies find different, namely Hernaes (2001) found that the higher a person's age will extend the person's unemployment period. Likewise, younger workers will experience shorter periods of unemployment compared to older workers. Theodossiou and Zarotiadis (2010) found that workers aged over 45 years faces a much shorter period of work so that it has a longer duration of unemployment. Mukoyama (2004) states that older workers experience longer periods of unemployment than younger workers. Sansale *et al.* (2019) found that when individuals are faced with unemployment, young people are significantly more likely to find work rather than continuing education.

Gender has no significant effect on the duration of unemployment. This shows that female-educated workers do not necessarily have a longer duration of unemployment compared to men. The findings of this study are supported by the findings of Foley (1997) which states that women tend to be unemployed longer than men and married women are found to have a much longer unemployment period compared to married men. Tansel and Tasci (2004) stated that women experience a higher duration of unemployment than men. Theodossiou and Zarotiadis (2010) found that female workers face a much shorter work period so that they have a longer duration of unemployment

Marital status has a significant positive effect on the duration of unemployed educated workers who are not married has a longer duration of unemployment probability is 4.18% higher than those who are married. The odd ratio value of 1.55 means that the duration of unemployed who is not married is 1.55 times longer than the one who has been married. This shows that marital status is a determining factor for the duration of unemployed educated workers, where educated workers who are not married tend to experience a longer duration of unemployment compared to those who are married because workers with married status certainly have a higher economic burden of living compared to unmarried. The findings of this study are supported by the opinion of Kaufman and Hotchkiss (2006) stating that marital status causes differences between men and women in labor force participation, married women are required to carry out home activities, and the available labor market mostly accepts single-status women or single. In contrast to married men usually do not have significant barriers to entering the job market so that they will have a shorter duration of unemployment. Foley (1997) found that married women were found to experience periods of unemployment that were far longer than those of married men. Grogan and Berg (2001) found that a long duration of unemployment occurs in unmarried men. Khan and Yousef (2013) state that marital status determines the duration of unemployment, those who are not married tend to be unemployed longer than those who are married.

The position in the household has a significant positive effect on the duration of unemployment. Educated workers who are not head of the household have a probability of longer duration of unemployment is 3.75% higher than the head of the household. The odd ratio value of 1.48 means that the duration of unemployed who is not the head of the household is 1.48 times longer than the head of the household. This shows that the duration of unemployed educated workers is determined by the position in the household. Where workers who are non-head of households will have a longer duration of unemployment. The findings of this study support the results of Khan and Yousef's (2013) research which states that workplace employees who have the status of head of household tend to be unemployed compared to those who are not head of the family.

The residential area has a significant positive effect on the duration of unemployment. Educated workers who live in rural areas have a probability of experiencing a longer duration of unemployment is 6.58% higher than those living in cities. The odd ratio value of 1.98 means the duration of unemployed people who live in the village is 1.98 times longer than those who live in the city. This shows that the duration of unemployed educated workers in Indonesia is determined by the region of residence. This is because at this time not all rural areas have complete means of communication between workers who live in villages and cities so that information is related to employment. The research findings are supported by Foley (1997) which states that individuals who live in the area will experience a higher unemployment duration than those who live in cities. Grogan and Berg (2001) found that a long duration of unemployment occurs in individuals who live outside of big cities (rural)

## Conclusion

The unemployment duration of educated workers will be longer determined by the level of education, job training, work experience, age, marital status, position in the household and residential area while the gender do not affect the duration of unemployment. Educated workers graduating from senior high school/equivalent have a chance to be unemployed longer than college graduates, who have never been in job training have a chance to be unemployed longer than those who have already attended work training, who have work experience with a chance to be unemployed longer than those without work experience. Young educated

workers have the opportunity to be unemployed longer than the elderly, those who have not married have the opportunity to be unemployed longer than those who have been married, who are not heads of households have the opportunity to be unemployed longer than family heads and educated workers who live in villages have the opportunity to be unemployed longer compared to those who live in the city.

#### Research Implications

Policy implications that need to be carried out by related parties to shorten the duration of unemployed educated workers are: first, encourage the workforce graduating from senior high school/equivalent to continue their education to tertiary institutions so that the workforce has the skills needed by the labor market. Secondly, there should be more work training centers in every region in Indonesia to provide training, upgrading, and counseling so that the workforce will be better prepared to enter the labor market. Third, a more informative job market needs to be expanded to bring together job seekers and companies that need workers. Fourth, educational institutions must increase their apprenticeship activities for students in various agencies and companies in order to find work experience.

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