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Original Article

The Effect of Education, Workforce, Economic Growth and Labor Force Participation Rate on City Labor Absorption in Aceh Province, Indonesia

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Abstract: The Labor Force Participation Rate (LFPR) provides an overview of the population aged 15 years and over who are active at working age, whether they are currently working, not yet working, or looking for work. By knowing the LFPR, the percentage of the working-age population that is economically active in a region can be known. The higher the LFPR, the higher the supply of available labor to produce goods and services. This study aims to analyze the effect of education, junior and senior high school workforce, economic growth, and labor force participation rates on employment absorption in the districts/cities of Aceh Province. The data used is secondary data with a time series from 2014 to 2021 and cross-sections from 23 districts/cities in Aceh Province. Data analysis used the Panel Regression Model with the Generalized Least Squares Method. The results showed that the workforce has a junior high school education, the average length of schooling, and the labor force participation rate positively affect employment. In contrast, the workforce has a high school education, and economic growth does not affect employment. Considering that the number of junior high school education staff is the largest, educational improvement must be carried out with government policies in remote areas in Aceh Province so that more highly educated workers can be absorbed.

Keywords: Labor absorption; Education level; Workforce; Economic growth; Labor force participation rate.

1. Introduction

Law of the Republic of Indonesia Number 13 concerning Manpower states that every worker has the same opportunity to get a job without discrimination. The Labor Force Participation Rate (LFPR) provides an overview of the population aged 15 years and over who are active at working age, whether they are currently working, not yet working, or looking for work. By knowing the LFPR, the percentage of the working-age population that is economically active in a region can be known. The higher the LFPR, the higher the supply of available labor to produce goods and services. However, the lower the LFPR, the more the working-age population chooses to join the non-labor force group (Yuliani et al., 2018). The lower the LFPR, the more working-age people go to school and take care of the household, and the more those not in the labor force result in lower LFPR rates (Lassassi & Tansel, 2020). Globalization has resulted in the loss of many industries so that the available jobs in the United States are few, which impacts decreasing labor force

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participation. According to the SAKERNAS survey, the working age population reached 3,920 people with a workforce of 2,520 thousand people, while there were 1,431 people not in the labor force. The population of Aceh in 2021 will reach 5,333 people (Badan Pusat Statistik, 2021). The workforce with a junior high school education is more likely to get a job than those with a senior high school education. Badan Pusat Statistik Aceh Province in 2021 describes a workforce with a junior high school education of 20,454 people. As for the high school level, there were 13,022 people. It shows that the level of education provides an overview of the quality of human resources (Fitri & Junaidi, 2017).

The workforce with a junior high school education tends to accept various types of work to earn income for survival. Education affects educated unemployment because the higher the education, the longer it takes to find a job. The average length of schooling describes the number of years the workforce spends in formal education (Al Badry, 2019). The average length of school has an impact on employment. The level of education attained by the jobs available is sometimes inconsistent. As a result, many people are forced to work in jobs unrelated to their educational background. The economic growth of a region is reflected in the Gross Regional Domestic Product (GRDP), which is the total net value of final goods and services produced by various economic activities in an area in a certain period. GRDP is an indicator used to assess the economy and welfare of a region, with the assumption that if GRDP increases, the total value-added output of all economic units will increase (Kairupan, 2013). An increase in output causes an increase in the number of jobs demanded. An increase in labor supply will occur if demand increases, while employment opportunities will be created if there is an increase in aggregate demand and supply.

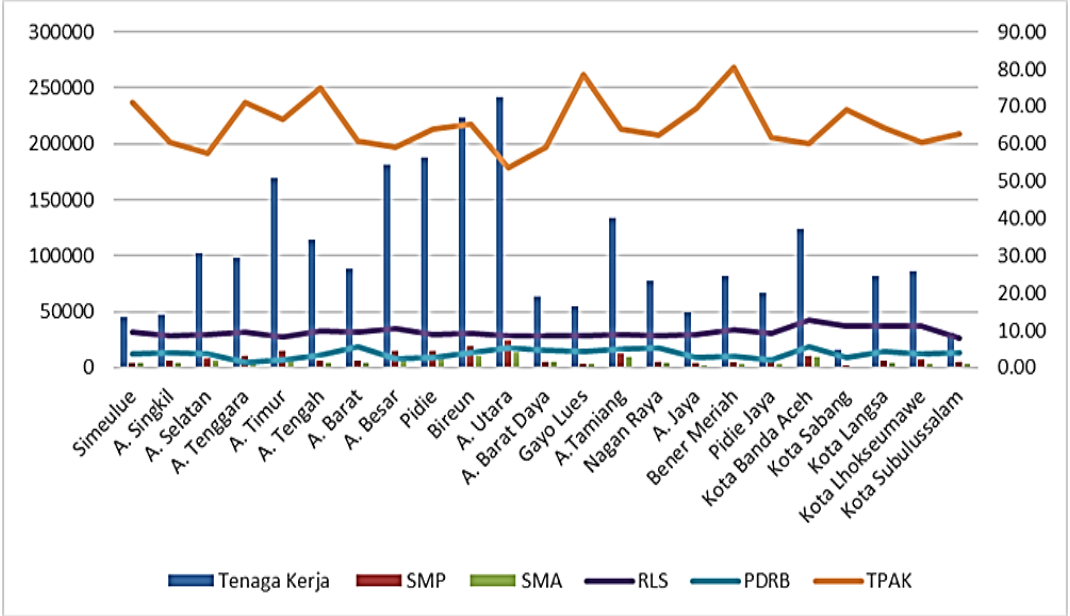

Figure 1. Development of Education Workforce Absorption, Work Force, Economic Growth and LFPR in Cities of Aceh Province in 2021

Figure 1 shows that the most absorbed workforce is in North Aceh District. This is because the district has the largest population in Aceh Province, followed by Bireuen District and other areas. Sabang City has the least number of workers due to its large population, so the number of workers absorbed is small. Education in districts/cities in Aceh Province is dominated by the workforce with junior high school education. North Aceh District occupies the top position in the number of workers with junior and senior high school education. At the same time, the City of Sabang has the lowest junior and senior high school-educated workforce in Aceh. It shows that the workforce with junior high school education accommodates more workers than those with senior high school education. The city of Banda Aceh is at the top of the list. The average length of schooling (RLS) occurs because the development of education in this city is better, in addition to easy access and motivation to get a higher education. The average length of education in Subulussalam City is the last because the area is expanded. Therefore, it is necessary to make improvements so that it can be interpreted that the RLS of the population in Aceh Province is nine (9) years or equivalent to junior high school.

West Aceh District's economic growth is outstanding compared to other regions. It shows that with increased economic growth, the overall added value output will increase, resulting in an increase in employment, which will impact the increase in employment. Still, Aceh Tenggara District is the smallest because of the size of government spending. Each urban district's Labor Force Participation Rate (LFPR) varies. Bener Meriah District, with the highest LFPR, indicates that the district is the highest supplier of labor to produce goods and services. The greater the LFPR explains, the more the working-age population chooses to work to generate income to help the family economy and the many poor and educated people. The lowest LFPR in North Aceh means that the working-age population in the district is

starting to prosper, earn money, and realize the importance of education (Yuliani et al., 2018). The lower LFPR means that working-age people who attend school and care for the household are not in the labor force because they do not generate income (Yuliani et al., 2018).

2. Literature Review

The amount of labor absorption is reflected in the availability of jobs. The large number of job opportunities describes the ability of business units to absorb labor. But sometimes, the ups and downs in the number of industries are not accompanied by jobs. Barthos & Mansoer (2011) cited that the elements that affect the workforce are (i) increasing market demand for production results, producers tend to expand their production capacity by adding workers, and (ii) if the capital issued is not too large, the production costs will not be too high so that the selling price of goods per unit is not high. Then, producers will increase production and add workers. The labor force is the population of productive age between 15-65 years who can actively work. Law Number 13 of 2003 concerning Manpower, workers are people who can work and produce goods and services so that all their needs can be met.

A workforce that has great educational potential and plays a very important role in development. According to Fitri & Junaidi (2017), with education, it is hoped that the community can participate in development and maximize its potential. Education reflects HR; the higher the education, the higher the skills and productivity that must be possessed to enter the world of work so that they can compete in the labor market. The link between education and employment is where education represents the quality of the workforce. Education shows human capital in skills, knowledge, independence, and the formation of one's personality. According to Rahmah & Juliannisa (2022), expertise is an important capital for the workforce in achieving productivity. The type of education influences a person in choosing a particular job. Atiyatna et al. (2016) explained that the time spent in education affects the quality of human resources. The variation in the average length of schooling between individuals is the cause of individual differences. The capability and productivity gap will have an impact on labor demand.

After education, a development indicator that plays a crucial role is the economic growth of a region. Increased economic growth indicates an increase in the absorption of labor in the economy. It occurs due to labor force participation (Indradewa & Natha, 2015). An increase in the amount of GRDP impacts increasing employment because employment opportunities increase. If the amount of GRDP increases, energy absorption will also increase. The labor force includes those ready to work or in the productive age group for work. The labor force participation rate includes employed, unemployed, or seeking work. If the LFPR is high, it means that the income for the workforce is high because it can produce goods and services, but if the LFPR is low, it means that the population is more prosperous, so they choose to join non-forces and do not participate in the labor market (Faelassuffa & Yuliani, 2022). The larger the LFPR, the larger the workforce, and the more people who go to school and take care of the household, the larger the non-labor workforce.

3. Materials and Methods

This study uses secondary data from the Aceh Provincial Statistics Center (BPS), including workforce, education, economic growth and LFPR. This study uses panel data for 2014-2021. (Ahmaddien, 2020) Three models are used to estimate panel data: the Common Effect Model, the Fixed Effect Model, and the Random Effect Model. In the Random Effects Model approach, estimation uses cross-weight or General Least Square (GLS) to measure heterogeneity. The selection of GLS because the OLS estimation does not meet the classical assumption test requirements. The equation is as follows:

$$TKJ = f\left(EDU, PDRB, LFPR\right) \tag{1}$$

$$LTKJ_{it} = a + \beta_0 LEDU_{it} + \beta_1 PDRB_{it} + \beta_0 LFPR_{it} + \varepsilon_{it} \tag{2}$$

Where L is Log-linear, LTKJ is workforce (people), α is LEDU Constant is Education Level consisting of RLS is the average length of schooling (years), number of junior and senior high school workforce (people), GRDP represents growth economy, Gross Regional Domestic Product (percent), LFPR is labor force participation rate (percent), i is Cross section (Regency/City) data t is Time series data, β0 is Intercept, β1β2β3 is Regression coefficient, and ε is Error term. Model testing was carried out with the Classical Assumption Test, t-test, F-test, and Panel model selection test through the Chow and Hausman and determination tests.

4. Results

4.1. Descriptive statistics

Descriptive statistics provide an overview of the characteristics of the observed variables. The descriptive statistics of the variables used in this study are shown in Table 1.

Table 1. Descriptive Statistics Analysis

	LTKJ	LSMP	LSMA	LRLS	PDRB	LFPR
Mean	11.26352	8.880786	8.490405	2.197495	4.158089	64.85939
Median	11.28130	8.781782	8.442682	2.183238	4.315000	63.40500
Maximum	12.40639	10.17618	9.647046	2.551786	13.23000	88.04206
Minimum	9.521422	7.187657	6.253829	1.912501	-11.99857	10.19325
Std. Dev.	0.647342	0.616919	0.628230	0.136153	1.867014	8.069952
Skewness	-0.433399	-0.212386	-0.665432	0.461766	-3.161438	-1.109174
Kurtosis	2.971944	3.316529	3.823768	2.990724	35.74290	13.91082
Jarque-Bera	5.766287	2.151439	18.78173	6.539654	8525.919	950.4145
Probability	0.055959	0.341052	0.000083	0.038013	0.000000	0.000000
Obs.	184	184	184	184	184	184

Table 1 describes the data used, which amounted to 184 observations of 8 time series data and 23 districts/cities. Labor absorption has an average value of 11.26352, a median of 11.28130, a minimum of 9.521422, a maximum of 12.40639, and a standard deviation of 0.647342. It means that the standard deviation is smaller than the average value so that the distribution of observed values is more even. Middle school-educated workers have a mean of 8.88078, a median of 8.781782, a minimum of 7.18765 with a maximum score of 10.17618, and a standard deviation of 0.61691, which means that the standard deviation is smaller than the mean so that the scores are spread evenly. Likewise, workers with high school education have an average score between the maximum and minimum scores. The average value is smaller than the standard deviation, so the scores are evenly distributed. Furthermore, the average length of schooling, economic growth, and LFPR are consistent with other variables where the average value is between the maximum and minimum scores, and the average value is greater than the standard deviation, indicating a more even distribution of data. The Jarque-Bera value exceeds 0.05, and the variable probability value is generally significant.

4.2. Panel Data Regression

This study uses Chow and Hausman tests to estimate the best model for panel data regression, as shown in Table 2.

Table 2. Results of the Best Model Selection

Model	Probability		Selected models
	Chow test	Hausman test	
Model 1	84.175976 (0.0000)	102.868049 (0.0000)	Fixed Effect Model

Table 2 captures the results of the best model selection test. The Chow stated that a P-value of 0.0000 indicated that H0 was rejected. Alternative hypothesis (Ha) was accepted where the probability value was smaller than alpha 0.05, so the model chosen had a fixed effect. The Hausman test shows a P-value of 0.0000, which means the probability is less than 0.05 based on the criteria chosen for the fixed effect model to analyze this study.

4.3. Classical Assumption Testing

The classic assumption test consists of normality, heteroscedasticity, and autocorrelation tests. The results of the classic assumption test in this study, where the normality test is 0.000, means the significant value is below 0.05, so the data is not normally distributed. The Heteroscedasticity test has a value of 0.0044, significant > 0.05, then there is heteroscedasticity. The autocorrelation test shows a value of 0.0000, which means there is an autocorrelation test. On the basis of the test results, it can be indicated that there is a violation of the classical assumptions, as shown in Table 3.

Table 3. Result of Classical Assumption Testing

	Sig.
Normality	0.0000
Heteroscedasticity	0.0044
autocorrelation	0.0000

Table 3 shows the result of the classical assumption test. This study concludes that the classical assumption is violated when using the Ordinary Least Square (OLS) estimator. This can be corrected using the General Least Square (GLS) estimator to meet the requirements of the classical assumption. According to Greene (2018), GLS can overcome heteroscedasticity problems, so the GLS method is more effective and efficient than the OLS method. Jacob et al. (2014) explained that violation of classical assumptions allows for heteroscedasticity to occur, so the GLS method is appropriate for estimating the regression coefficient of panel data using the GLS method for estimating linear regression.

4.4. Result of Panel Regression Analysis

Table 4 is a comparison of the FEM and GLS models. If you use the FEM model with the OLS estimator, there is a violation of the classical assumption. Therefore, it is corrected using a GLS estimate that meets the classical assumption test requirements. The following FEM model values for comparison with the GLS are shown in Table 4.

Table 4. Result of Panel Regression Analysis

Variable	FEM	Sig.	GLS	Sig.
LSMP	0.073653	0.2979	0.539551	0.0000
LSMA	-0.027191	0.2497	0.008628	0.7101
LRLS	1.355.069	0.0000	1.215.513	0.0000
PDRB	-0.000320	0.9114	0.002775	0.3307
LFPR	0.004235	0.0000	0.004398	0.0000
C	7.589.153	0.0000	3.430.778	0.0000
R-squared	0.991946		0.502925	
Adjusted R-squared	0.990552		0.488963	
F-statistic	7.115.961		3.601.904	
Prob(F-statistic)	0.000000		0.000000	

Table 4 indicates there is a significant difference when using the FEM model, workers with junior high school education do not affect employment, but in the GLS estimation, workers with junior high school education have a positive effect on employment. However, the FEM model cannot fulfill the classical assumption test requirements, so it cannot be used to estimate the research model. The GLS R2 value is 0.502925. Although it is small, namely 50.29 percent, it can explain the absorption of labor that meets the classical assumption requirements. The workforce with junior high school education positively affects employment absorption by 0.53951, meaning that every 1 percent increase in the workforce with junior high school education will increase employment absorption by 0.53951 percent. Also, the workforce with high school education does not affect employment and ceteris paribus, so it can be assumed that the workforce that is more absorbed in the labor market is the population with junior high school education. RLS positively affects employment; if RLS increases by 1 percent, it will increase employment absorption by 1.215513 percent, meaning that the average population has completed junior high school education. The human capital theory says a person can develop human resources through education. The results of this study align with Atiyatna et al. (2016) that the workforce with junior high school education plays a greater role in absorbing the workforce than the workforce with high school education. However, in this study, the estimation results show that the length of education dominates employment, meaning that education is the biggest factor in determining employment.

Al Badry (2019) states that the higher the education, the higher the labor absorption. However, in contrast to the findings of Amaral et al. (2020), a high level of education does not affect getting a job; the workforce in the last 30 years has generally been in the secondary education group, which ranges from 9 years or more. Other findings in this study indicate that economic growth has no effect on employment. These findings contradict neoclassical economic theory, Supandi et al. (2022) said that higher economic growth will increase employment opportunities to increase output in the economy (Hjazeen et al., 2021). Economic growth in developing countries tends to fluctuate due to weak public sectors and political instability, and economic growth reduces the achievement of the desired level of employment. In this study, economic growth does not affect employment because the economic growth of districts/cities in Aceh Province varies

and is relatively low. LFPR positively affects employment, with a coefficient of 0.004398, meaning that an increase in LFPR by 1 percent will increase employment absorption by 0.004398 percent. According to Fatmawati & Syafitri (2016), in the Solow-Swan Theory, the more productive people will produce high output, which can affect economic growth. This study's results align with the findings of Mala et al. (2017) and Kusuma (2014) that the working-age population decides to enter the labor market, causing the workforce looking for work to increase. As a result, the number of people getting jobs tends to increase.

5. Conclusions

This study concludes that the workforce has junior high school education, the average length of schooling, and LFPR, which positively affect district/city workforce absorption in Aceh Province. Meanwhile, the workforce has a high school education, and economic growth does not affect the absorption of district/city workers in Aceh Province. The relatively small economic growth of districts/cities in Aceh Province has not been able to increase employment significantly. Considering that the workforce with junior high school education is larger than the workforce with senior high school education, the government is designing appropriate policies to increase education in remote areas in Aceh Province evenly so that more workers with high school education to tertiary education are absorbed, so that the quality of the workforce will be better. Good.

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