



**THE IMPACT OF AGRICULTURAL SECTOR OUTPUT,  
INDUSTRIAL SECTOR OUTPUT, HUMAN RESOURCES,  
AND THE NUMBER OF POPULATION ON POVERTY  
LEVEL IN DISTRICTS/CITIES IN EAST JAVA  
PROVINCE INDONESIA IN 2014-2018**

**Efi Surya Maharani**

Faculty of Economics, Universitas Negeri Malang, Indonesia

efimaharani1998@gmail.com

**Imam Mukhlis** 

Faculty of Economics, Universitas Negeri Malang, Indonesia

imam.mukhlis.fe@um.ac.id

**Abstract**

*The main issue faced by every country, especially developing countries like Indonesia is poverty. The rising number of poverty shows that economy development has not been reached yet. East Java Province, Indonesia has become one of the provinces with poverty level above the national level (Head Count Index/HCI) and has the highest number of poor population on a national scale (Head Count/HC). This study was aimed to know the impact of agricultural sector output, industrial sector output, human resources, and population number on poverty level in districts/cities in East Java, Indonesia. This was a qualitative research with panel data used. The data used was secondary data obtained from Central Bureau of Statistics (BPS). Regression analysis method with model fixed effect was used in this study. This study found that agricultural sector output had a positive and significant impact on poverty, while industrial sector output, human resources, and population number had negative and significant impact on poverty level in districts/cities in East java in 2014-2018.*

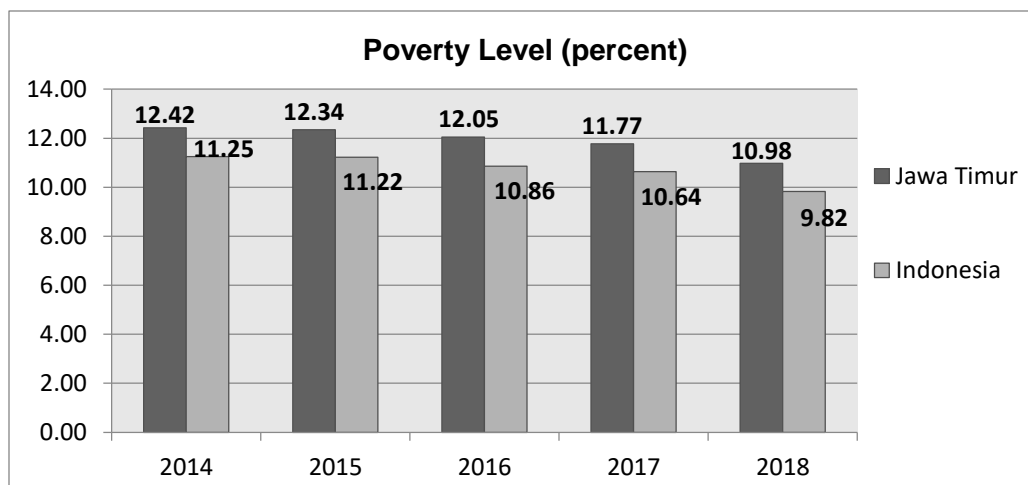
*Keywords: Agricultural Sector, Industrial Sector, Human Resources, Population, Poverty*



## INTRODUCTION

The main issue faced by every country, especially developing countries like Indonesia is poverty. The rising number of poverty or the number of poor population shows that economy development has not been reached yet. Economy development has a main goal to create high development along with the fall of poverty level, income gap, and unemployment level (Todaro, 2006). Thus, poverty issues need special attention as mentioned in the fifth nawacita of President of Republic of Indonesia, which is to improve Indonesian quality of life. Based on Badan Pusat Statistik (BPS), East Java is one of the provinces which always has poverty level (Head Count Index/HCI) above the national level and has the most population of poor people (Head Count/HC) on a national scale. Responding to that, East Java Governor (2014-2019) has a mission to improve people's welfare in which one of the target is to decrease the percentage of number of poor people. Some poverty issues in East Java include the high level of poverty which is above the SDGs and Medium-Term Regional Development Plan (RPJMD) also the decrease number of poverty going slowly.

Figure 1: Poverty Level in Indonesia and East Java 2014-2018



(Source: Central Bureau of Statistics, processed 2019)

The level of poverty in East Java on March 2018 was 10.98% or reaching 4,332.6 thousand poor people. This poverty level had decreased as much as 0.79% or 284.4 thousand poor people from March 2017 in which it was 11.77% or 4,617 thousand poor people (Figure 1). Based on the data above, it is shown that the government's effort to solve poverty has not yet reached the target aimed which was 11.2-10.9% (Bappeda of East Java Province, 2019). This

obviously needs a deeper analysis by analysing the sectoral conditions of East Jawa and some other indicators impacting poverty.

Agricultural sector is a sector that requires a lot of human resources so it is hoped that by increasing agricultural sector output, the level of poverty can be decreased. The number of labours working in agricultural sector in East Java is 32.49% and agricultural sector is the third biggest sector contributing to East Java's GDP as much as 11.78% (Bappeda of East Java, 2019). The economy shift from primary sector to secondary sector has happened many times. Therefore, not only increasing agricultural sector output only but also industrial sector output's efficiency is expected to be able to decrease the poverty level. Moreover, human resources, based on the duration of education attended, becomes the driving factor in economy activity which eventually gives impact on the decrease of poverty, and the number of rising population will increase poverty if job opportunities are not provided.

The impacts of those four factors on poverty level need to be proven in a study. The analysis of panel data in this study was aimed to help to see the four factors' impacts on poverty level. This study is expected to give benefits such as to be a reference and consideration in creating policy leading to decreasing the number of poverty and regional development.

## **LITERATURE REVIEW**

### **Poverty Theory**

According to Amartya Sen in Mukhlis (2019), poverty is a complex and diverse world which needs a clear analysis in its all dimensions. The definition of poverty by Sen is marked by low and helpless education, knowledge, and skill. Education has a very important role in increasing human's skills (O'Hearn, 2009). Central Bureau of Statistics of Indonesia defined poor people as people who have an average per capita expenditure per month below the poverty line. According to World Bank in Wijayanto (2016) poverty is hunger. Poverty is lack of shelter. Poverty is being sick and not being able to go to school and not knowing to know how to read. Poverty is not having a job, poverty is fear for the future, living one day at a time. Poverty is powerless, lack of representation and freedom. This includes low income and the inability to get basic necessities and services needed to survive with dignity. Oxford Poverty and Human Initiative (OPHI) collaborated with Nation Development Programme (UNDP) in 2010 developing Multidimensional Poverty Index, Indonesian multidimensional poverty index has three indicators which are education, health, and life quality standard (Ningrum et al, 2019).

Meanwhile, according to Marinda et al (2017), poverty is caused by two reasons: a) Macro view, poverty occurs when there is a resources ownership pattern which is different hence it causes unbalanced income distribution, poor people has limited and bad resources, and b) Poverty occurs because of the low quality of human resources.

### **Agricultural Sector**

Agricultural sector has three main functions in economy according to Tambunan (2003), which are: First, as an investment source in non-agricultural sectors: money surplus (MS) in agricultural sector becomes the investment funds source of other sectors. Second, as a source of raw materials or input of other sectors, especially agro-industry and trade sector. Third, through the increase of output market's demands, as a diversification of production in other economy sectors. Highlighting the growth potential in agricultural sector which is begun by the enhancement of technology and possibility of agricultural sector to become a leading sector (Kuncoro, 2010). In addition, food needs also increases which has to be compensated by the availability of food in agricultural sector (Mukhlis, 2019).

### **Industrial Sector**

Industrial sector is often called as a leading sector where the role of this sector is related to the success of an economy development of a country with one of the indicators is a development in the industrial sector. According to Chenery (Kuncoro, 2010) in the analysis of Pattern of Development theory or theory of structural change is a theory which emphasises on addition of economy transformation mechanism which is experienced by a developing country, which at the beginning was emphasising on agricultural sector into a more modern economy structure and is dominated by industrial and service sector. The findings by Saleem and Donaldson (2016) showed that there are four ways of poverty alleviation which are industrialisation, village development, social welfare, and petroleum production employment. The benchmarks of industrial sector include: contribution of manufacturing industrial sector towards GDP, the number of labour resources absorbed in industrial sector and contribution of industrial commodity towards goods and services exportation (Arsyad, 2016).

### **Human Resources**

Human resources is a basic development aim which consists of education and health. Education plays a key role in shaping the skills of a developing country to absorb modern technology and develop capacity to create sustainable growth and development. The new growth theory stresses the importance of government role in improving human resources to

improve human productivity. Investing on education can improve the quality of human resources which is shown by the increase of knowledge and skills of a person. The higher the education of a person, the more the knowledge and skills of a person improve hence it will promote to his/her productivity (Purnami & Saskara, 2016).

## Population

The concept written by Malthus “diminishing of return” in his writing titled “Easy on the Principle of Population” explained the tendency of population growth of a country according to series of measurement which is twice as much every 30-40 years. Population growth is twice more than the production factor availability (Dupaquier, 2015). If population growth does not come with a rapid increase in food production, then income per capita will tend to fall hence the income earned is only sufficient to meet the needs just to live. Based on the findings of Mukhlis and Simanjuntak (2018), it is shown that the number of population and the economy growth in East Java did not have any significant impact. This shows that the decrease of number of population does not mean that it will affect the economy growth in which economy growth usually reflects the people’s welfare.

There are various different existing opinions about the positive or negative impacts of population growth. Therefore, a further study on those variables is needed to obtain a relevant result.

## RESEARCH METHODS

This research design was quantitative explanatory. It aims to explain the relationship between 2 or more variables. Data used in this research were secondary data of 38 regencies/cities in East Java Province and the data was limited every year during monitoring period year 2014 to 2018. As in the year, East Java Province, Indonesia has become one of the provinces with poverty level above the national level and has the highest number of poor population on a national scale. Secondary data in this study include data on Gross Regional Domestic Product at constant prices in agricultural sector 2010, gross regional domestic product at constant prices in industry sector 2010, average length of schools and the total of population. The secondary data was obtained from Statistics Indonesia, BPS and Bappeda of East Java Province. Data analysis was performed by statistically testing the variables that had been collected with the help of the EVIEWS 8 program. Function model used in this research were:

$$\ln\_POV = \beta_0 + \beta_1 \ln\_SP + \beta_2 \ln\_SI + \beta_3 \ln\_RLS + \beta_4 \ln\_JP + \epsilon_{it}$$

Where:

POV = Level of Poverty

$\beta_0$  = Constant

$\beta_1, \beta_2, \beta_3, \beta_4$  = Coefficient of Elasticity

SP = agricultural sector output (ln)

SI = industry sector output (ln)

RLS = average of school length (ln)

JP = population (ln)

i = regency/city

t = year 2014 to 2018

$\varepsilon$  = residual/error term

Panel data analysis according to Baltagi (2005), can be done in three estimation methods; Pooled Least Square (PLS), Fixed Effect Method (FEM) and Random Effect Method (REM). Determining whether the data panel model can be regressed into common method (Pooled Least Square), fixed effect method, or random effect method, therefore Chow Test and Hausman Test is applied. After getting the best method, the next step was testing classical assumption, namely the test for normality, multicollinearity and heteroscedasticity.

## RESULTS AND DISCUSSION

Model estimation testing is conducted to find the most appropriate model to be used in econometric analysis. Model estimation testing is performed in two ways; the Chow Test and the Hausman Test.

Table 1: Chow Test

F	Sig.	Conclusion
203.913	0.000	<i>Fixed Effect Model</i>

Tabel 2: Uji Hausman

$\chi^2$	Sig.	Conclusion
55.998	0.000	<i>Fixed Effect Model</i>

Based on Tables 1 and 2, the results of the Chow and Hausman tests show a significance value of 0,000 less than 5% of the significance level, so the panel data method used is the Fixed Effect Model.

The next step is to test the classic assumptions to ensure that the estimation results are neutral and consistent. The tests include tests of normality, multicollinearity, and heteroscedasticity.

## Normality Test

Table 3: Normality Test

Residual	Jarque-Bera	Probability
Model 1	3.147	0.207

From Table 3, it can be seen that the probability value of 0.207 is greater than  $\alpha$  (0.05), it indicates that the distribution of residuals is normally distributed.

## Multicollinearity Test

Table 4: Multicollinearity Test

	LN_SP	LN_SI	LN_RLS	LN_JP
LN_SP	1.000000	0.171973	-0.667950	0.770986
LN_SI	0.171973	1.000000	0.298253	0.561015
LN_RLS	-0.667950	0.298253	1.000000	-0.381370
LN_JP	0.770986	0.561015	-0.381370	1.000000

Based on Table 4, the results of multicollinearity testing show the value of each independent variable is less than 0.80, it implies that there is no strong correlation between independent variables (non multicollinearity).

## Heteroscedasticity Test

Based on Table 5, the probability value of each independent variable is more than 0.05. Thus, it can be concluded that this study is free from heteroscedasticity.

Table 5: Glejser Test

	Probability
LN_SP	0.2021
LN_SI	0.9798
LN_RLS	0.1873
LN_JP	0.6821

Then the significance test is implemented to determine whether there is an influence of the independent variable on the dependent variable both simultaneously and partially.

Table 6: Data Panel Regression Fixed Effect Model

<b>Independent Variable</b>	<b>Regression Coefficient</b>	<b>T</b>	<b>Probability</b>	<b>Conclusion</b>
Constant	23.329	3.829	0.0002	Significant
LN_SP	0.437	2.958	0.0036	Significant
LN_SI	-0.334	-5.866	0.0000	Significant
LN_RLS	-0.329	-2.234	0.0269	Significant
LN_JP	-1.544	-3.153	0.0020	Significant
T tabel ( $t_{185,5\%}$ )	= 1.973			
R <sup>2</sup>	= 0.994			
F-statistics	= 724.684			
Sig. F	= 0.0000			
F table( $F_{3,185,5\%}$ )	= 2.64			
N	= 190			

The effect of all independent variables, those are agricultural sector output (SP), industrial sector output (SI), human capital (RLS) and population (JP) on the dependent variable, that is level of poverty (POV), in Table 6., can be seen that the probability value of F-statistics is 0,000 or less than 0.05 (<0.05). Therefore, it can be concluded that all the independent variables in this study influence the dependent variable significantly. The coefficient of determination (R2) in the regression results in this study is 0.994 which means that the variation of the independent variable is able to explain the variation in the dependent variable by 99.4%. While the remaining 0.6% is explained by other variables not included in the regression estimation model.

The agricultural's output has positive and significant effect towards poverty levels in the Districts/Cities of East Java Province in 2014-2018. This condition is in line with Rostow's Theory of Economic Growth and the result of research from Pratomo et al (2015). The agricultural sector in East Java is a labor-intensive sector which absorbs 33.05 percent of the 20 million working population aged 15 years and over. Ideally, the output increase of the agricultural sector (GDP) should reduce poverty. However, the results of this study indicate that increasing agricultural sector output actually has a tendency to increase poverty.

Corresponding to the results of research done by Novriansyah (2018), the study which was conducted in Gorontalo District shows that poverty occurring in that district is caused by the large number of people who still depend on the agricultural sector. The price of agricultural



products that is liable to be unstable and the distribution chain of agricultural products that are too large might cause the final price of agricultural products to be more expensive and charged to consumers. As we know, people always complain about the price of agricultural products, especially staple goods that continue to soar. Thus, the higher prices of agricultural products will burden the community. The results of this study are similar to the research conducted by Fabian Research Report (2015) in Mukhlis (2019), research conducted in the United Kingdom shows that an increase in food prices has burdened low-income groups in the range of 16% -35%.

An increase in agricultural sector output that is not matched by a smaller agricultural product distribution chain will cause food prices to become expensive, and hence, this will burden the people in meeting their food needs, which will cause them to starve and poverty occurs everywhere. The results of this study are also supported by the results of research conducted by Krisnawati et al (2018) which shows that rice production and GDP of the food crops sub-sector have a positive influence on rural poverty in the western and eastern regions of Indonesia.

Meanwhile, industrial sector output has a negative and significant effect on poverty levels in East Java Province/Regency which is in accordance with Lewis's Two Sector Development Theory and the results of research from Saleem and Donaldson (2016). This is also similar to the results of research from Cazzuffi et al (2017) which is stated that the growth of the food processing industry can reduce poverty and even have an impact not only on the regions that are experiencing growth but also in neighboring regions.

Surabaya City, Sidoarjo Regency, Pasuruan Regency, and Gresik Regency are industrial centers in East Java. One of the improvements in economic conditions in the region was triggered by new investment in the region. Investment is expected to be able to open more jobs and reduce unemployment rates, thus impacting on reducing poverty levels. This research is corresponding to Sakti (2016), that the output of the manufacturing industry sector in East Java has a significant negative effect on poverty. The very study is also supported by the results of Vanegas et al. (2015), that the manufacturing sector has a negative influence on poverty reduction in Costa Rica and Nicaragua.

Next, the average school's time span has a negative and significant influence on the level of poverty in the Regency/City of East Java Province in accordance with the New Growth Theory and O'Hearn (2009). Increasing the quality of human resources is shown by increasing one's knowledge and skills that will encourage increased work productivity. Better work productivity will have an impact on greater income and more job choices.

This research is supported by the results of research from Felix and Belo (2019), that high levels of education can reduce poverty levels because education is a basic need to

increase one's knowledge in eight countries in South and East Asia. This study was also supported by the results of research from Purnami and Saskara (2016), that the level of education and economic growth had a negative and significant impact on the number of poor regencies/cities in Bali Province.

Finally, the population has a negative and significant influence on poverty levels in the Regency/City of East Java Province, the results of this study are in accordance with Adam Smith's theory and the results of research from Silastri (2017). Surabaya in 2018 was one of the cities with the highest population in East Java Province that was 2,885,555 people with a fairly low poverty rate (4.8 percent). The number of population in East Java Province is dominated by productive age population so that employment opportunities to improve welfare are still wide open.

In addition, a larger population can also be a potential market as it is a source of demand for various goods and services. The growing demand will also drive various economic activities, which consistently will create an economical scale of production that benefits all parties. The results of this study are supported by the results of research from Cruz and Ahmed (2018) which shows that the working age of the population will increase regional domestic product growth per capita and reduce poverty levels in Sub-Saharan Africa and South Asia.

## **CONCLUSION AND SUGGESTIONS**

Based on the results of the analysis and discussion above, a conclusion can be drawn. The output of the agricultural sector has a positive and significant influence on poverty levels, which means that every 1% increase in output of the agricultural sector will increase 0.44% of the poverty rate, *ceteris paribus*. Industrial sector output has a negative and significant impact on poverty levels, which means that every 1% increase in industrial sector output will reduce 0.33% poverty rate, *ceteris paribus*. Human capital has a negative and significant effect on poverty levels, which means that every 1% increase in human capital will reduce 0.33% poverty rate, *ceteris paribus*. The total population has a negative and significant impact on poverty levels, which means that every 1% increase in the population will reduce 1.54% poverty rate, *ceteris paribus*.

Based on the results of the study, the researcher has several suggestions for the Provincial Government of East Java especially the Regional Economic Development Planning Agency (Bappeda) of East Java Province to promote the agricultural modernization program by developing agricultural technology, providing materials and production equipment as well as setting price limits for food commodities. Furthermore, they need to grow new industries, which based on the regional excellence. They also need to improve the education facilities and

regulate the distribution of population by transmigration programs and the construction of public facilities in remote areas.

## REFERENCES

- Arsyad, L. (2016). *Ekonomi Pembangunan, Edisi Lima*. Yogyakarta: UPP STIM YKPN.
- Badan Pusat Statistik. (2019). *Data dan Informasi Kemiskinan Provinsi di Indonesia tahun 2014-2018*, BPS Jakarta. Retrieved November 22, 2019, from [bps.go.id: https://www.bps.go.id/dynamic/table/2016/08/18/1219/persentase-penduduk-miskin-menurut-provinsi-2007---2019.html](https://www.bps.go.id/dynamic/table/2016/08/18/1219/persentase-penduduk-miskin-menurut-provinsi-2007---2019.html)
- Badan Perencanaan Pembangunan Daerah (Bappeda) Provinsi Jawa Timur. (2019). *Buku Dinamis Semester 1 Tahun 2019*. Jawa Timur: Bappeda Jawa Timur. Retrieved November 22, 2019, from [bappeda.jatimprov.go.id: http://bappeda.jatimprov.go.id/bappeda/wp-content/uploads/2019/09/buku\\_dinamis\\_semester\\_1\\_2019.pdf](http://bappeda.jatimprov.go.id/http://bappeda.jatimprov.go.id/bappeda/wp-content/uploads/2019/09/buku_dinamis_semester_1_2019.pdf)
- Baltagi, B. H. (2005). *Econometric Analysis of Data Panel*, third edition. England: John Wiley & Sons Ltd.
- Cazzuffi, C., Lopez, M. P., & Solaga, I. (2017). Local Poverty Reduction in Chile and Mexico: The role of food manufacturing growth. *Food Policy*, 68, 160-185.
- Cruz, M. & Ahmed, S. A. (2018). On The Impact of Demographic Change on Economic Growth and Poverty. *World Development*, 105, 95-106.
- Dupaquier, J. (2015). Malthus, Thomas Robert (1766–1834). *International Encyclopedia of the Social & Behavioral Sciences*, 457–461.
- Felix, E. G. S., & Belo, T. F. (2019). The Impact of Microcredit on Poverty Reduction in Eleven Developing Countries in South-East Asia. *Journal of Multinational Financial Management*, 30, 1-16.
- Krisnawati, E., Suman, A., & Saputra, P.M.A. (2018). Kajian Pengaruh Program Nasional Upaya Khusus Peningkatan Produksi Padi Terhadap Kemiskinan Perdesaan di Wilayah Barat dan Timur Indonesia. *Jurnal Ilmu Ekonomi Pembangunan*, 18(1), 14-33.
- Kuncoro, M. (2010). *Dasar-dasar Ekonomika Pembangunan Edisi Lima*. Yogyakarta: UPP STIM YKPN.
- Marinda, A., Nasikh, Mukhlis, I., Witjaksono, M., Utomo, S. H., Handoko, Wahyono, H., Soesilo, Y. H., Moehersono, & Santoso, S. (2017). The Analysis of the Economic Growth, Minimum Wage, and Unemployment Rate to the Poverty level in East Java. *International Journal of Economic Research*, 14(13), 127-138.
- Mukhlis, I. (2019). *Nasionalisme, Ketahanan Pangan dan Pengentasan Kemiskinan*. Malang: Universitas Negeri Malang.
- Mukhlis, I. & Simanjuntak, T. H. (2018). The Relationship Between Capital Expenditure, Income Inequality, Total Population and Economic Growth Post-Implementation of Local Autonomy in Indonesia. *Journal of Economic Cooperation and Development*, 39(1), 63-82.
- Ningrum, D. R., Thaariq R. M., Sagala, M., & Aidha, C. N., (2019). Indeks Kemiskinan Multidimensi: Memotret Wajah-Wajah Kemiskinan di Indonesia. *Prakarsa Policy Brief*. Retrieved November 22, 2019, from <https://repository.theprakarsa.org>
- Novriansyah, M. A. (2018). Pengaruh Pengangguran dan Kemiskinan Terhadap Pertumbuhan Ekonomi di Provinsi Gorontalo. *Gorontalo Development Review* 1(1), 59-73.
- O'Hearn, D. (2009). Amartya Sen's Development as Freedom: Ten Years Later, *Policy & Practice: A Development Education Review*, 8, 9-15.
- Pratomo, D. S., Saputra, P. M., & Shofwan. (2015). Does Minimum Wage Policy Help poor Workers? Evidence from Indonesia. *Journal of Applied Economic Science*, 8(38), 1199-1204.
- Purnami, N. M. S. & Saskara, I. A. N. (2016). Analisis Pengaruh Pendidikan dan Kontribusi Sektor Pertanian Terhadap Pertumbuhan Ekonomi Serta Jumlah Penduduk Miskin. *Jurnal Ekonomi Pembangunan Universitas Udayana*, 5(11), 1188-1218.
- Sakti, D. C. (2016). Pengaruh Output Sektor Pertanian, Industri Pengolahan dan Perdagangan Terhadap Jumlah Penduduk Miskin Propinsi Jawa Timur (Tahun 2005-2013). *Jurnal Ekonomi dan Bisnis*, (2), 113-124.
- Saleem, Z. & Donaldson, J.A. (2016). Pathways to Poverty Reduction. *Development Policy Review*, 34(5), 671-690.

Silastri, N. (2017). Pengaruh Jumlah Penduduk dan Pendapatan Domesik Regional Bruto (PDRB) Terhadap Kemiskinan di Kabupaten Kuantan Singingi. *JOM Fekon*, 4(1), 105-117.

Tambunan, T. (2003). *Perekonomian Indonesia beberapa Masalah Penting*. Jakarta: Ghalia Indonesia

Todaro, P. M. (2006). *Pengembangan Ekonomi Di Dunia Ketiga Edisi Kesembilan*. Jakarta: Erlangga.

Vanegas, M. SR., Gartner, W., & Senauer, B. (2015). Tourism and Poverty Reduction: an Economic Sector Analysis for Costa Rica and Nicaragua. *Tourism Economics*, 21(1), 159-182.

Wijayanto, T. A. (2016). Analisis Keterkaitan Pertumbuhan Ekonomi, Ketimpangan Pendapatan dan Pengentasan Kemiskinan di Provinsi Sulawesi Utara Tahun 2000-2010. *Jurnal Berkala Ilmiah Efisiensi*, 16(2), 418-428.