Analysis of the Influence of Labor, Unemployment Rate, and Education on Poverty Levels in Ngawi Regency

Rafi Fahrezi Asmynendar[1]*, Wiwin Priana Primandhana[2]

Universitas Pembangunan Nasional Veteran Jawa Timur, Indonesia[1]

Universitas Pembangunan Nasional Veteran Jawa Timur, Indonesia [2]

Corresponding Email: 20011010181@student.upnjatim.ac.id*

Abstract

Poverty structural which is the most dominant in the Regency Ngawi. The poverty that occurs consequence imbalance in system economic, social, and policy, which causes part public difficult go out from poverty, although they own will For working. Development sector education in the Regency Ngawi Still limited and quality low impact on low welfare population, reflected from height number unemployment among poor people. Agriculture traditional Still dominant However not enough capable absorb power Work in a way effective. Meanwhilethat, modern industry and services have not developed, so that opportunities for productive work are still limited. Research This do testing hypothesis with use analysis regression multiple. Labor Force Variables and Unemployment Rate show positive influence However No significant to level poverty in the Ngawi Regency. The Education variable shows connection negative and influential significant to level poverty in the Regency Ngawi.

Keywords: Poverty, Labor, Unemployment, Education, Ngawi.

Introduction

East Java Province recorded the highest poverty rate in Indonesia, according to data from the Indonesian Central Statistics Agency (BPS) in 2022. This condition is due to various interrelated factors, including the region's large population and high population growth rate. Rapid population growth is often not accompanied by improvements in the quality of life for residents, leading to various challenges such as limited infrastructure, supporting facilities, and adequate employment opportunities(Alfionika et al., 2021). As a result, many residents struggle to meet their basic needs and are trapped in a cycle of poverty.

The problem of poverty in East Java not only impacts the province at an aggregate level, but is also felt at the district and city levels within the region (Faturohim et al., 2023). One of the most impacted areas is Ngawi Regency, which is among the 10 regencies/cities with the highest poverty rates in East Java. The high poverty rate in Ngawi Regency reflects various

structural challenges, such as limited access to education, health care, and economic opportunities, which impact the overall well-being of the community (Rambe et al., 2023).

Ngawi Regency is located in the western part of East Java Province and borders Central Java Province. This region covers an area of 1,298.58 km² and is geographically located at coordinates 110°10'–111°40' East Longitude and 7°21'–7°31' South Latitude. Of the total area, approximately 39 percent, or 504.76 km², is rice fields. According to the 2004 Ngawi Regency Regional Regulation (Perda), Ngawi Regency consists of 19 sub-districts and 217 villages, four of which have sub-district status.

Structural poverty is the most prevalent issue in Ngawi Regency. This poverty stems from imbalances in the economic, social, and policy systems, making it difficult for some people to escape poverty, even if they are willing to work. Jawa Pos (2019) reports that the poverty rate in Ngawi Regency reaches 45% of the total population. Sidik & Firmansyah (2020) explain that limited development of the education sector in Ngawi Regency, with its low quality, impacts the low welfare of the population, as reflected in the high unemployment rate among the poor. Furthermore, Marbun & Muchtolifah (2023) note that the majority of the workforce only has an elementary or junior high school education, making it difficult to enter the formal sector (Vaalavuo & Sirniö, 2022). Traditional agriculture remains dominant but is less able to effectively absorb the workforce. Meanwhile, modern industry and services have not yet developed, so productive employment opportunities remain limited.

10 cities/regencies in East Java with the highest percentage of poor people in 2023. Sampang Regency is in first place with a percentage of poor people of 21.76%. Second, Bangkalan Regency at 19.35%. Third, Sumenep Regency at 18.70%. Next, Probolinggo Regency at 17.19%. Then, Tuban Regency at 14.91% and Ngawi Regency at 14.40%. Next is Pamekasan Regency at 13.85% followed by Pacitan Regency at 13.65% and Bondowoso Regency at 13.34% and Lamongan Regency at 12.42%. Several interrelated factors influence the poverty rate in Ngawi Regency. Among them, labor force, unemployment rate, and education are the three main variables contributing to poverty conditions in the region.

Population is a vital asset for development that can be optimally utilized. However, population size can also become a burden if not accompanied by adequate improvements in the quality of human resources (Marito et al., 2023). Population is a vital component of economic and social development. They are the workforce that produces goods and services, as well as consumers who create market demand. Optimally utilizing population potential can accelerate economic growth and improve public welfare.

The workforce includes all individuals of productive age who are ready and willing to work, both those who are employed and those who are seeking work. According to Law No. 13 of 2003 concerning Manpower, the workforce is defined as all individuals aged 15 years and over who are not currently engaged in formal education. The composition of the workforce in a region can be influenced by many factors, including demographics, education levels, and local economic conditions.

Generally, a high labor force is associated with a decrease in poverty rates, as more individuals have the opportunity to earn an income. According to radarmadiun.jawapos.com

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(2023), the Ngawi Regency Government continues to strive to reduce unemployment, one of which is through optimizing the Vocational Training Center (BLK). Optimizing this community-based approach is crucial as a space to increase the capacity and capabilities of human resources.
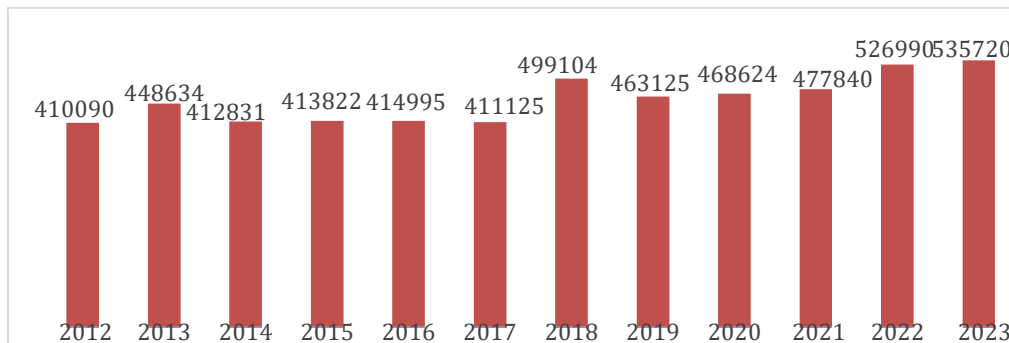

Figure 1. Graph of the Labor Force in Ngawi Regency 2012-2023 (People)

In Figure 2, the labor force in Ngawi Regency fluctuated between 2012 and 2023, tending to show slight increases and decreases. In the last four years, 2020, 2021, 2022, and 2023, there has been consistent growth. This reflects the continued population growth in Ngawi Regency over those years. However, an increase in the labor force will not necessarily reduce poverty unless it is accompanied by increased productivity and qualified human resources.

The unemployment rate refers to the percentage of the workforce that has not worked for a specific period of time. Unemployment is considered a serious economic problem because it directly impacts economic growth. When someone is unemployed, they lose a source of income, potentially pushing them into poverty (Syahril, 2014).
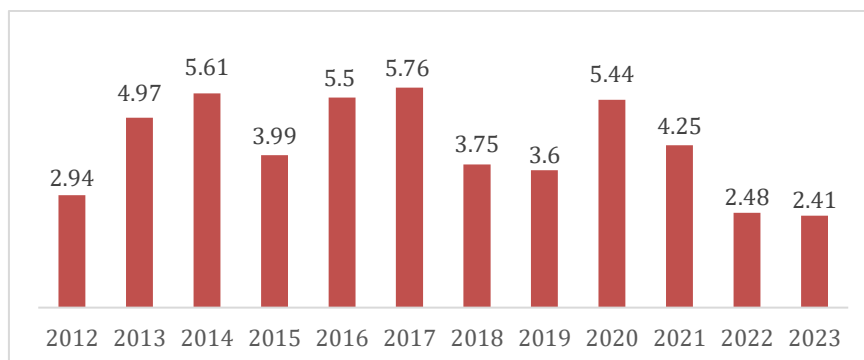

Figure 2. Graph of Open Unemployment Rate in Ngawi Regency 2012-2023 (%)

As seen in Figure 3, the Open Unemployment Rate in Ngawi Regency fluctuated between 2012 and 2023. The lowest Open Unemployment Rate was in 2023, at 2.41%. The highest Open Unemployment Rate was in 2017, at 5.76%.

Unemployment has a direct impact on poverty. When someone is unemployed, they automatically lack the income to meet their daily needs. The inability to meet these needs leads to the individual being categorized as poor. Lincolin Arsyad (2015), in Muslihatinningsih & Jainal (2020), states that there is a close relationship between high unemployment rates and poverty. The majority of unemployed individuals fall into the poor category. Furthermore, low

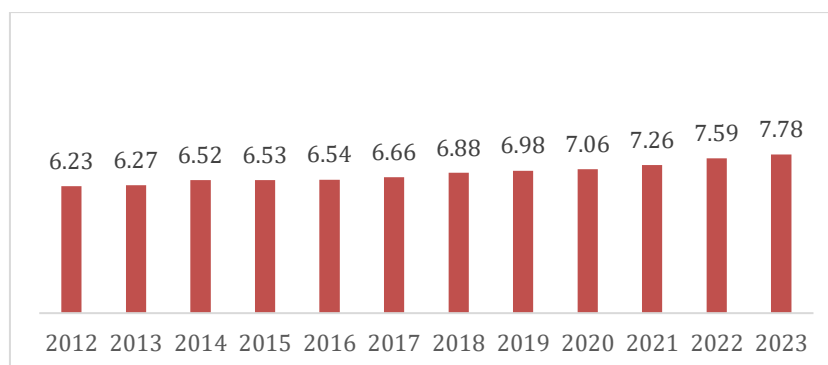quality human resources also contribute to poverty, but unemployment remains a major contributing factor.

Figure 3. Graph of Average Length of Schooling in Ngawi Regency 2012-2023 (Years)

As seen in Figure 4, the average years of schooling in Ngawi Regency continued to increase from 2012 to 2023, although not significantly. The lowest average years of schooling was in 2012, at only 6.23 years. The highest average years of schooling was in 2023, at 7.78 years. Furthermore, according to 2022 data from the Central Statistics Agency (BPS) of Ngawi Regency, approximately 49.6% of workers only have an elementary school education. These figures illustrate the need for significant attention in Ngawi Regency to improve the education of its citizens.

Education is a high priority for improving living standards and reducing poverty (Haughton & Shahidur, 2009). Therefore, increasing access to and achievement in education is a top priority in efforts to improve people's quality of life and reduce poverty. Aprianto & Ulfah (2013), citing Suparno (2009), emphasize that the quality of human resources plays a crucial role in determining a country's competitiveness. Superior human resources are not only the key to individual success but also the main foundation for the nation's progress as a whole.

Literature Review

Operational Definition and Measurement of Research Variables

Operational definition and measurement of variables refer to the process of concretizing or defining research concepts into research variables, including determining the methods and units of measurement for each variable. The transformation of concepts into variables can be carried out based on existing theoretical foundations, findings from previous research, empirical experience, and relevant facts. In the context of this research, the operational definition and measurement of variables involve:

1. Dependent Variable

a. Poverty Level (Y)

Poverty is a situation where an individual or household is unable to meet minimum basic needs, both in terms of consumption expenditure and access to basic services. This condition is

measured based on the poverty line established by the Central Statistics Agency (BPS). Data on the number of poor people in Ngawi Regency are presented as a percentage (%).

2. Independent Variable

a. Labor Force (X1)

All residents aged 15 years and over who are actively involved or ready to participate in economic activities, either by working or looking for work. The data presented includes the population of Ngawi Regency in individuals for the period 2012-2023.

b. Unemployment Rate (X2)

The working-age population (15 years and above) who were unemployed during the past week, looking for work, or preparing a business but have not yet found work. Information on this unemployment rate is expressed as a percentage (%) for the period 2012-2023.

c. Education (X3)

Operational education is defined as a structured and hierarchical educational process, starting from elementary school, secondary school, to university level, conducted by official educational institutions recognized by the government, and resulting in a valid diploma or certificate of graduation, in accordance with regulations from the Ministry of Education, Culture, Research, and Technology. Education is a variable represented by the Average Years of Schooling in Ngawi Regency for the period 2012-2023, expressed in years.

Research Method

This study adopted a quantitative research method. The data analyzed were secondary and covered a period from 2012 to 2023. The variables covered in the data included labor force, unemployment rate, and education, which influence poverty levels in Ngawi Regency. Data were collected through two approaches. First, using a literature study technique, where information was obtained by reading and referring to literature relevant to the research topic. Second, using an e-literature study, which involved collecting data from electronic sources such as e-journals and the official website of the Central Statistics Agency.

This study tested the hypothesis using multiple regression analysis. This statistical approach aims to assess the influence of several variables on a specific variable. The variable that triggers the influence is called the independent variable, and the variable that responds to that influence is called the dependent variable (Ghozali, 2018).

Result

Discussion is part most important from overall content article scientific. The purpose of the discussion is : Answer problem research, interpreting findings, integrating findings from study to in gathering knowledge that has been exist and compose theory new or modify theories that have been There is :

Table 1. Multiple Linear Regression Results

Dependent Variable: KEMISKINAN
Method: Least Squares
Date: 07/31/25   Time: 13:28
Sample: 2012 2023
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.12654	2.380350	10.13571	0.0000
TK	6.505577	6.473215	1.004999	0.3443
TPT	0.024529	0.134526	0.182338	0.8599
RLS	-2.200990	0.547196	-4.022309	0.0038
R-squared	0.848888	Mean dependent var		12.10750
Adjusted R-squared	0.792221	S.D. dependent var		0.925744
S.E. of regression	0.421980	Akaike info criterion		1.373482
Sum squared resid	1.424535	Schwarz criterion		1.535118
Log likelihood	-4.240894	Hannan-Quinn criter.		1.313639
F-statistic	14.98031	Durbin-Watson stat		1.475139
Prob(F-statistic)	0.001203			

Based on the image above, the multiple linear regression equation is obtained as follows:

$$Y = 24.12654 + 6.505577TK + 0.024529TPT - 2.200990RLS + e$$

From the regression equation above, the following explanation is obtained:

1. The constant of 24.12654 shows that when the Labor Force (X1), Unemployment Rate (X2) and Education (X3) are constant (no increase or decrease), the Poverty Rate (Y) will increase by 24.12654 percent.
2. The value of 6.505577 indicates a positive correlation between the workforce (X1) and the poverty rate (Y). This means that if the workforce increases by 1 person, the poverty rate will increase by 6.505577 percent. Similarly, if the workforce decreases by 1 person, the poverty rate will decrease by 6.505577 percent.
3. The coefficient value of 0.024529 indicates that there is a positive relationship between the Unemployment Rate (X2) and Poverty Rate (Y) variables. This means that every 1 percent increase in the unemployment rate will cause an increase in the poverty rate of 0.024529 percent. Conversely, if the unemployment rate decreases by 1 percent, the poverty rate will also decrease in the same proportion.
4. The regression coefficient of -2.200990 indicates that the Education variable (X3) has a negative relationship with the Poverty Level (Y). This means that every 1-year increase in the average length of community education will result in a 2.200990 percent decrease in the poverty level. Conversely, a 1-year decrease in the average education level will lead to an increase in the poverty level in the same proportion. This emphasizes the important role of education in poverty alleviation efforts in a region.

Partial Test (T-Test)

The t-test, also known as the partial test, is used to evaluate the partial effect of independent variables (such as labor force, unemployment rate, and education) on poverty levels in Ngawi Regency. Decisions in the t-test are based on the following criteria:

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1) The null hypothesis (H₀) is accepted if the probability value (p-value) of the t-test is greater than 0.05 or if the calculated t-value is smaller than the t-table value. This indicates that the independent variable does not have a significant influence on the dependent variable partially.

2) The alternative hypothesis (Hₐ) is accepted if the probability value (p-value) from the t-test is less than 0.05 or if the calculated t-value is greater than the table t-value. This means that the independent variable has a partial significant effect on the dependent variable.

Based on Table 1 above, it can be explained as follows:

T-table calculation:

a) $\alpha = 0.05$
b) $df = n - k - 1 = 12 - 3 - 1 = 8$
c) t-table = (α /2; df) = (0.025 ; 8) = 2.30600

1. Labor Variables

The t-count value is 1.004999 with a probability of 0.3443. With a t-count value that is less than the t-table (1.004999 < 2.20099) and a probability that is greater than 0.05 (0.3443 > 0.05), it can be concluded that partially, the workforce has a positive and insignificant impact on the poverty rate in Ngawi Regency.

2. Unemployment Rate Variable

The t-count value reached 0.182338 with a probability of 0.8599. With a t-count lower than the t-table (0.1823 < 2.20099) and a probability greater than 0.05 (0.8599 < 0.05), it can be concluded that partially, the unemployment rate has a positive and insignificant influence on the poverty rate in Ngawi Regency.

3. Education Variable

The t-count value reached 4.022309 with a probability of 0.0038. With a t-count greater than the t-table (4.022309 > 2.20099) and a probability smaller than 0.05 (0.0038 > 0.05), it can be concluded that partially, education has a negative and significant influence on the poverty rate in Ngawi Regency.

Simultaneous Test (F Test)

The F-test, also known as the simultaneous significance test, is used to evaluate whether all independent variables in a regression model collectively have a significant effect on the dependent variable. In the context of this study, the F-test was applied to determine whether independent variables such as the number of workers, the unemployment rate, and education level simultaneously contribute significantly to changes in poverty levels in a region. The results of this test serve as the basis for assessing the overall relevance of the constructed regression model in explaining variations in poverty levels.

The F test criteria are as follows:

-   *H* 0 is accepted: if the F-statistic probability is greater than 0.05.

- *H* a is accepted: if the probability of F-statistic is less than 0.05.

Based on Table 1, to evaluate the joint influence of independent variables on the dependent variable, it can be analyzed through the following calculation results:

a) α = 0.05
b) k = Number of Variables = 4
c) n = Number of Observations = 12
d) df 1 = k – 1 = 4 -1 = 3
e) df 2 = n – k = 12 – 4 = 8
f) F Table (df1 ; df2) = (3 ; 8) = 4.07

Test assumptions:

- H0 is accepted if F count ≤ 4.07
- H0 is rejected if F count is > 4.07
- H0 is accepted if Prob > F < 0.05
- H0 is rejected if Prob > F < 0.05

Based on the calculations above, we can obtain:

The probability value of the F-statistic is 0.001203, which is smaller than the significance level of 0.05. The F-statistic obtained is 14.98031. Along with the calculated F-value exceeding the F-table value (14.98031 > 4.07), it can be concluded that simultaneously the independent variables, namely labor, unemployment rate and education have a significant influence on the poverty rate in Ngawi Regency.

Coefficient of Determination Test (R2)

The coefficient of determination test essentially measures how much of the variation in the dependent variable can be explained by the proportion of variation in all independent variables. The test results in Table 4.9 show an R² value of 0.848888, indicating that approximately 84.8% of the variation in poverty levels in Ngawi Regency can be explained by the model's independent variables, such as labor force, unemployment rate, and education. Conversely, the remaining approximately 15.2% is influenced by other factors not considered in this study.

The Influence of the Workforce on Poverty Levels in Ngawi Regency

Based on Figure 1, it can be seen that during the 2012-2023 period, the workforce showed a positive relationship, but this relationship did not meet the requirements for statistical significance. The significance value for the workforce of 0.3443 exceeds the 0.05 level, indicating that the workforce variable does not show statistical significance. As a result, Ha is rejected and H0 is accepted.

The majority of the workforce in Ngawi Regency still comes from groups with low levels of education and limited skills. This results in most of them only being able to access employment in the informal sector or traditional agriculture. Both sectors generally have low productivity and provide insufficient income to meet basic needs. As a result, even though they

are statistically registered as employed, their economic situation remains below the poverty line. This phenomenon demonstrates that employment status does not always equate to economic well-being, especially if the work is informal and unproductive.

According to Adianita, H., et al. (2024), available jobs are not growing in proportion to the workforce, creating pressure on the labor market. When the increase in the workforce is not accompanied by an increase in decent employment opportunities, the impact will actually increase the number of underemployed and underutilized workers.

Furthermore, limited access to job training and technical skills development exacerbates this situation. Without improving the quality of human resources, the large workforce cannot be optimally utilized to support economic development and poverty alleviation. Therefore, even if the workforce increases, this does not have a significant impact on poverty reduction.This finding is consistent with the results of a study by Maulana, F. (2024) which stated that labor does not have a significant effect on poverty.

The Influence of Unemployment Rate on Poverty Level in Ngawi Regency

Referring to Figure 1, it can be seen that during the 2012–2023 period, there is a positive relationship between the unemployment rate and the poverty rate. However, this relationship is not statistically significant. This is indicated by the significance value for the unemployment rate variable of 0.8599, which is greater than the significance threshold of 0.05. Thus, it can be concluded that the unemployment rate does not have a significant effect on the poverty rate during the observed period. Therefore, the null hypothesis (H_0) is accepted and the alternative hypothesis (H_a) is rejected.

The Open Unemployment Rate (TPT) shows a positive and significant impact on poverty. This means that an increase in unemployment will be accompanied by an increase in the number of poor people. As stated by Sadono Sukirno (2004), unemployment leads to a decline in welfare due to the loss of income sources, which ultimately pushes people into poverty. High unemployment directly exacerbates poverty in a region. This is caused by the growth of the new workforce not being commensurate with the availability of jobs, resulting in many individuals being unable to enter the workforce.

Although unemployment is theoretically expected to increase poverty, research results indicate that its effect is neither strong nor statistically significant. The positive but insignificant effect of the Open Unemployment Rate on poverty may occur because a large portion of the population works in the informal sector or traditional agriculture with low incomes, so even if employed, they remain classified as poor. Furthermore, fluctuations in poverty are more influenced by other factors such as education and productivity, and are helped by government assistance programs that mitigate the impact of unemployment. This research aligns with the findings of Nurdianti, L., et al. (2024), which state that the unemployment rate has a positive but insignificant effect on poverty.

The Influence of Education on Poverty Levels in Ngawi Regency

Referring to Figure 1, during the 2012–2023 period, the education variable showed a negative relationship with the poverty rate. This relationship meets the criteria for statistical

significance. This is indicated by a significance value of 0.0038, which is smaller than the 0.05 level. Thus, it can be concluded that the education variable has a statistically significant influence on the poverty rate. Therefore, H_0 is rejected and H_a is accepted.

Education, represented by the average years of schooling (ALS), has a negative and significant effect. This means that when ALS increases, the poverty rate decreases, and conversely, when ALS decreases, the poverty rate increases. According to Susanto & Indah (2019), low levels of education make it difficult for individuals to find work, ultimately leaving them without income and prone to poverty. Conversely, individuals with higher levels of education have a greater chance of finding work with decent wages, thereby improving well-being and reducing poverty.

This opinion is reinforced by Bloom's theory (2006), which asserts that education plays a crucial role in improving a society's social and economic well-being. Education not only provides basic knowledge and skills but also expands access to better job opportunities and boosts individual productivity. With adequate education, individuals are more likely to obtain decent employment, earn a stable income, and engage in high-value economic activities. This ultimately improves individual and household well-being and contributes to a sustainable reduction in poverty levels. This finding is in line with the research of Surbakti, et al (2023) which concluded that education has a positive and significant influence on poverty.

Conclusion

Labor Variables show influence positive However No significant to level poverty in the Regency Ngawi during period 2012–2023. This indicated by the value significance of 0.3443 which exceeds the significance limit of 0.05. With so, no there is Enough proof statistics For reject hypothesis zero (H_0), which means power Work No influential in a way significant to level poverty.

Unemployment Rate Variable own connection positive However No significant to level poverty in the Regency Ngawi in the same period. Significance value of 0.8599 which is bigger from level significance of 0.05 strengthens conclusion that No there is significant influence. Therefore that, hypothesis null (H_0) is accepted and the hypothesis alternative (H_a) is rejected

The Education variable shows connection negative and influential significant to level poverty in the Regency Ngawi during 2012–2023. Significance value of 0.0038, which is below level significance of 0.05, becomes proof sufficient statistics for reject hypothesis zero (H_0) and accept hypothesis alternative (H_a), which states that education influential in a way significant to level poverty.

Declaration of conflicting interest

The authors declare that there is no conflict of interest in this work.

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Funding acknowledgment

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