

The Effect of Poverty and Open Unemployment Rate on the Human Development Index in West Nusa Tenggara Province

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Abstract

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This research aims to determine the effect of the Poverty Rate and Open Unemployment Rate (OUR) on the Human Development Index (HDI) in the NTB Province from 2010 to 2024. The research method used is a quantitative method with a causal approach (causality). The data analysis technique uses a multiple linear regression model with the help of SPSS software, accompanied by classical assumption tests and hypothesis tests. This study uses secondary data in the form of time series data with a period of 15 years, from 2010 to 2024. Data were obtained from official government agencies, specifically the Central Statistics Agency (BPS) of NTB Province. The research results show that partially, the Poverty Rate and the Open Unemployment Rate have a negative and significant impact on the HDI in the NTB Province. Simultaneously or together, these two variables also have a significant impact on the HDI in the NTB Province. To improve the welfare and quality of human development in a region, local governments must prioritize policies and programs that can reduce poverty and unemployment rates in order to encourage the increase of HDI in NTB Province.

INTRODUCTION

Human development has become an essential indicator in evaluating the success of development policies in modern economies (Sagar & Najam, 1998). Development is no longer viewed solely from the perspective of economic growth, but also from improvements in the quality of human life (Ranis et al., 2000). In this context, the Human Development Index (HDI) has been widely used to measure the level of human welfare by integrating three fundamental dimensions, namely health, education, and a decent standard of living (United Nations Development Programme, 2023). The health dimension is measured through life expectancy at birth, the education dimension through mean years of schooling and expected years of schooling, while the standard of living dimension is reflected in income indicators adjusted to purchasing power (Roffia et al., 2023). A higher HDI value indicates better human welfare and greater opportunities for individuals to achieve a productive and meaningful life (Morse, 2023).

The concept of human development is closely related to the capability approach proposed by Sen (1999), which emphasizes that development should expand people's freedoms and opportunities to achieve a better quality of life. In line with this perspective, human capital theory argues that investments in education and health play an important role in improving productivity and economic welfare (Becker, 1989; Schultz, 1961). However, the realization of human

development is often constrained by various structural socioeconomic problems, particularly poverty and unemployment.

Poverty remains one of the most persistent challenges in achieving inclusive and equitable development (Arkorful et al., 2020). Poverty can be defined as the inability of individuals to fulfill basic needs such as food, housing, education, and healthcare (Shapira & Teschner, 2023). The Central Bureau of Statistics (BPS) measures poverty using the Basic Needs Approach, in which individuals whose average monthly expenditure falls below the poverty line are classified as poor (BPS, 2023). From a broader perspective, poverty is also understood as a multidimensional phenomenon involving deprivation in various aspects of human life, including access to education, healthcare, and economic opportunities (World Bank, 2001). These limitations reduce individual capabilities and ultimately hinder improvements in human development outcomes.

In addition to poverty, unemployment also plays an important role in determining the level of human welfare. Open unemployment refers to individuals who belong to the labor force but have not yet obtained employment despite actively seeking work (BPS, 2023). According to Mankiw (2018), unemployment occurs when the supply of labor exceeds the demand for labor in the economy. High unemployment rates reduce household income, weaken purchasing power, and limit individuals' access to education and healthcare services (Haini et al., 2023). Consequently, unemployment can exacerbate poverty and slow down progress in human development.

At the regional level, disparities in socioeconomic conditions often influence the progress of human development. One of the provinces that continues to face challenges in improving human development is West Nusa Tenggara. Although the Human Development Index in this province has shown gradual improvement over the past decade, its level remains below the national average (BPS NTB, 2025). According to data from the Central Bureau of Statistics, the HDI of West Nusa Tenggara increased from 61.16 in 2010 to 70.93 in 2024 (BPS NTB, 2025). Despite this improvement, structural challenges such as relatively high poverty rates and limited employment opportunities remain significant issues in the region.

The poverty rate in West Nusa Tenggara is still higher than the national average. Data from the Central Bureau of Statistics show that the poverty rate in the province reached 11.91 percent in 2024, equivalent to approximately 658.60 thousand people. Meanwhile, the open unemployment rate was recorded at 2.73 percent in August 2024 (BPS NTB, 2025). Although this figure is lower than the national unemployment rate, it does not fully reflect the actual condition of labor welfare, as a considerable proportion of the workforce is still engaged in informal sectors with relatively low productivity. In addition, regional disparities in development among districts and cities remain

evident, indicating that improvements in HDI have not occurred evenly across the province (Rinaldi et al., 2025).

Several previous studies have suggested that poverty and unemployment are closely related to human development outcomes. High poverty levels tend to limit access to education and healthcare services, which are key components of human development (Chowdhury & Chowdhury, 2024). Similarly, unemployment reduces income stability and economic productivity, which may ultimately affect the ability of individuals to improve their standard of living (Padillah & Saputra, 2024). However, empirical evidence on the relationship between poverty, unemployment, and HDI at the regional level remains varied, particularly in developing regions where economic structures are still dominated by primary sectors.

Therefore, examining the influence of poverty and open unemployment on human development becomes important in understanding the dynamics of regional development. Empirical analysis is needed to identify how these socioeconomic factors affect the Human Development Index in West Nusa Tenggara Province. The findings of this study are expected to provide insights for policymakers in designing more effective development strategies aimed at reducing poverty, expanding employment opportunities, and improving the overall quality of human development.

Accordingly, this study aims to analyze the effect of poverty levels and the open unemployment rate on the Human Development Index in West Nusa Tenggara Province during the period 2010–2024.

METHODS

Research Design

This study employs a quantitative research approach to examine the influence of poverty level and open unemployment rate on the Human Development Index in West Nusa Tenggara Province. The research uses a descriptive and explanatory design to analyze the relationship between the independent variables and the dependent variable. The analysis focuses on identifying the extent to which poverty and unemployment contribute to variations in human development outcomes across the region.

Data Source

This research uses secondary data obtained from the official publications of the Badan Pusat Statistik. The data consist of annual statistical records on the Human Development Index, poverty rate, and Open Unemployment Rate in West Nusa Tenggara Province.

The observation period covers the years 2014 to 2023. These data were selected because they provide consistent and reliable indicators that reflect socio economic conditions and human development performance in the region.

Variables and Measurement

This study involves one dependent variable and two independent variables. The dependent variable is the Human Development Index. The Human Development Index represents the level of human development measured through three main dimensions: health, education, and standard of living. The index is expressed on a scale ranging from zero to one hundred.

The first independent variable is the poverty level. Poverty level refers to the percentage of population living below the poverty line as defined by the national statistical authority. This indicator reflects the proportion of individuals whose income is insufficient to meet basic needs. The second independent variable is the Open Unemployment Rate. The Open Unemployment Rate represents the percentage of the labor force that is unemployed but actively seeking employment.

Analytical Method

The data in this study are analyzed using multiple linear regression analysis (Dahliah & Nur, 2021). This method is applied to determine the influence of poverty level and Open Unemployment Rate on the Human Development Index.

The regression model used in this research can be expressed as follows:

$$IPM = \alpha + \beta_1 \text{Poverty} + \beta_2 \text{TPT} + \epsilon$$

Where:

- IPM represents the Human Development Index α represents the constant β_1 and β_2 represent the regression coefficients
- Poverty represents the poverty level TPT represents the
- Open Unemployment Rate ϵ represents the error term

Classical Assumption Tests

Before conducting regression analysis, several classical assumption tests are performed to ensure the validity of the model (DeVellis, 2006). These tests include the normality test, multicollinearity test, and heteroscedasticity test (Hawkins, 1981). The normality test is conducted to determine whether the data are normally distributed (Tsagris & Pandis, 2021). The multicollinearity test is used to identify potential correlations among independent variables. The heteroscedasticity test is conducted to examine whether the variance of the residuals remains constant across observations.

Hypothesis Testing

Hypothesis testing is conducted using the t test and F test (Savin, 1984). The t test is applied to determine the partial influence of each independent variable on the Human Development Index. Meanwhile, the F test is used to examine the simultaneous effect of poverty level and Open Unemployment Rate on the Human Development Index.

The coefficient of determination is also calculated to measure the proportion of variation in the Human Development Index that can be explained by the independent variables included in the model.

RESULTS AND DISCUSSION

Descriptive statistics were conducted to describe the general characteristics of the variables used in this study, namely the Human Development Index, poverty rate, and open unemployment rate in West Nusa Tenggara Province during the observation period. The descriptive analysis provides an overview of the distribution and trends of the variables before further statistical analysis is performed.

Table 1. Descriptive Statistics of Research Variables

Poverty Rate	
N	15
Range	8.67
Minimum	12.91
Maximum	21.58
Mean	16.0720
Std. Deviation	2.44201
Variance	5.963

The descriptive statistics indicate that the Human Development Index in West Nusa Tenggara experienced gradual improvement over the observation period. This trend reflects the ongoing progress in human development, particularly in the dimensions of education, health, and standard of living.

Meanwhile, the poverty rate and the open unemployment rate exhibited fluctuations during the study period. Variations in these indicators reflect the dynamic socio-economic conditions in the region, which may influence the overall level of human development

Classical Assumption Tests

Prior to conducting the regression analysis, several classical assumption tests were performed to ensure that the regression model met the required statistical assumptions. These tests include the normality test, multicollinearity test, heteroskedasticity test, autocorrelation test, and stationarity test.

Normality Test

The normality test was conducted to examine whether the residuals of the regression model were normally distributed. Given the relatively small sample size of the time series data ($n < 50$), the Shapiro–Wilk test was applied (González-Estrada & Cosmes, 2019). A probability value greater than 0.05 indicates that the residuals follow a normal distribution.

Table 2. Normality Test Results (Shapiro–Wilk)

Variable	Statistic	df	Sig.
Poverty Rate	0.968	15	0.246
Open Unemployment Rate	0.927	15	0.031
Human Development Index	0.867	15	0.826

The results show that the significance value is greater than 0.05, indicating that the residuals of the regression model are normally distributed. Therefore, the normality assumption is satisfied.

Multicollinearity Test

The multicollinearity test was performed to determine whether strong correlations exist among the independent variables. Multicollinearity was evaluated using the Tolerance and Variance Inflation Factor (VIF) values. A tolerance value greater than 0.10 and a VIF value less than 10 indicate the absence of multicollinearity.

Table 3. Multicollinearity Test Results

Variable	Tolerance	VIF
Poverty Rate	0.361	2.768
Open Unemployment Rate	0.361	2.768

The results indicate that all independent variables have tolerance values above 0.10 and VIF values below 10. This finding suggests that the regression model does not suffer from multicollinearity.

Heteroskedasticity Test

The heteroskedasticity test was conducted using the Glejser test to determine whether the variance of the residuals remains constant across observations (Glejser, 1969). A significance value greater than 0.05 indicates that heteroskedasticity is not present.

Table 4. Heteroskedasticity Test Results (Glejser Test)

Variable	Tolerance	VIF
Poverty Rate	0.361	2.768
Open Unemployment Rate	0.361	2.768

The results show that the significance values of the independent variables are greater than 0.05. This indicates that the regression model does not exhibit heteroskedasticity.

Autocorrelation Test

The autocorrelation test was conducted using the Durbin–Watson statistic to determine whether correlations exist between residuals in different time periods (Durbin & Watson, 1950). The Durbin–Watson value ranges between 0 and 4. A value between 1.5 and 2.5 generally indicates the absence of autocorrelation.

Table 5. Autocorrelation Test Results (Durbin–Watson)

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
0.998	0.996	0.995	0.20387	2.07

The Durbin–Watson value falls within the acceptable range, indicating that the regression model is free from autocorrelation.

Stationarity Test

Since the data used in this study are time series data, a stationarity test was conducted using the Augmented Dickey–Fuller (ADF) test (Paparoitis & Politis, 2018). The data are considered stationary if the probability value is less than 0.05.

Table 6. Stationarity Test Results (ADF Test)

Variable	ADF Statistic	Critical Value (5%)	Probability (Sig.)	Decision
Poverty Rate (X1)	-5.475	-3	0	Stationary
Open Unemployment Rate (X2)	-2.259	-3	0.186	Not Stationary
Human Development Index (Y)	-3.61	-3	0.006	Stationary

The test results indicate that the variables used in this study satisfy the stationarity requirement, allowing the regression analysis to be conducted.

Multiple Linear Regression Analysis

Multiple linear regression analysis was used to examine the effect of the poverty rate and the open unemployment rate on the Human Development Index in West Nusa Tenggara Province.

Table 7. Multiple Linear Regression Results

Variable	Unstandardized Coefficient (B)	Std. Error	t-Statistic	Sig.
Constant	84.076	1.155	72.783	0
Poverty Rate	-0.909	0.109	-8.312	0
Open Unemployment Rate	-0.755	0.233	-3.248	0.007

Based on the regression analysis, the estimated regression model can be expressed as follows:

$$HDI = a + \beta_1 Poverty + \beta_2 Unemployment + \varepsilon$$

The regression coefficients indicate the direction and magnitude of the influence of each independent variable on the Human Development Index.

Coefficient of Determination (R²)

The coefficient of determination (R²) was used to measure the ability of the independent variables to explain variations in the dependent variable.

Table 8. Coefficient of Determination (R²)

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.983	0.966	0.96	0.60088

The R² value indicates the proportion of variation in the Human Development Index that can be explained by the poverty rate and the open unemployment rate. The remaining variation is influenced by other factors not included in the regression model.

Hypothesis Testing

Partial Test (t Test)

The t test was conducted to examine the partial effect of each independent variable on the Human Development Index.

Table 9. t Test Results

Variable	B	Std. Error	t-value	Sig.
Constant	84.076	1.155	72.783	0
Poverty Rate	-0.909	0.109	-8.312	0
Open Unemployment Rate	-0.755	0.233	-3.248	0.007

The results indicate that the poverty rate has a significant effect on the Human Development Index. Similarly, the open unemployment rate also shows a significant relationship with the Human Development Index.

Simultaneous Test (F Test)

The F test was conducted to determine whether the independent variables jointly influence the Human Development Index.

Table 10. F Test Results

Source	Sum of Squares	df	Mean Square	F-value	Sig.
Regression	122.712	2	61.356	169.936	0
Residual	4.333	12	0.361		
Total	127.044	14			

The results indicate that the poverty rate and the open unemployment rate simultaneously have a significant effect on the Human Development Index in West Nusa Tenggara Province.

Discussion

The Effect of Poverty Rate on the Human Development Index

The results of this study indicate that the poverty rate has a negative relationship with the Human Development Index in West Nusa Tenggara Province. This finding suggests that an increase in poverty tends to reduce the level of human development in the region (Ullah & Majeed, 2023). Conversely, a decrease in poverty contributes to improvements in human development indicators, including education, health, and living standards.

This result is consistent with the conceptual framework of human development proposed by the United Nations Development Programme (2023), which emphasizes that human development is closely related to the ability of individuals to access basic needs such as education, healthcare, and adequate income. High levels of poverty limit people's ability to obtain these essential services, thereby slowing improvements in human development.

The negative relationship between poverty and the Human Development Index also aligns with previous empirical studies which suggest that poverty remains one of the primary barriers to improving human welfare. Individuals living in poverty generally face limited access to education and health services, which ultimately affects the quality of human resources and reduces overall development outcomes (Todaro & Smith, 2009).

In the context of West Nusa Tenggara Province, poverty continues to be one of the major socioeconomic challenges. Many households still experience limited income levels, which restrict their ability to invest in education and health. As a result, improvements in human development tend to occur more slowly in regions where poverty remains relatively high.

Furthermore, poverty often leads to intergenerational disadvantages. Families experiencing long term poverty may have difficulty providing adequate educational opportunities for their children, which can perpetuate low levels of human capital in the future. This situation highlights the importance of poverty reduction policies as a key strategy for improving human development outcomes.

Therefore, efforts to reduce poverty are essential for accelerating improvements in the Human Development Index. Government policies aimed at increasing income opportunities, improving access to education, and expanding healthcare services can play a crucial role in enhancing the quality of human development in the province.

The Effect of Open Unemployment Rate on the Human Development Index

The findings of this study also indicate that the open unemployment rate has a negative relationship with the Human Development Index in West Nusa Tenggara Province. This result suggests that higher unemployment levels tend to reduce the quality of human development.

Unemployment directly affects people's ability to earn income, which in turn limits their access to basic needs such as education, healthcare, and decent living conditions. As a result, regions with higher unemployment rates often experience slower progress in human development indicators.

According to labor economics theory, employment plays a fundamental role in improving individual welfare and social development. Employment provides individuals with the opportunity to generate income, improve their skills, and participate in economic activities that contribute to overall development (Mankiw, 2018).

The negative relationship between unemployment and human development is also supported by previous studies which suggest that high unemployment can lead to increased economic vulnerability and reduced social welfare. When individuals are unable to find employment, they may struggle to support their families, invest in education, or maintain adequate health conditions.

In the regional context of West Nusa Tenggara, fluctuations in the open unemployment rate are influenced by several factors, including economic growth, labor market structure, and the availability of employment opportunities. Limited industrial development and dependence on certain economic sectors may contribute to labor market instability in the region.

High unemployment levels may also lead to broader socioeconomic consequences, including increased poverty and social inequality. These conditions can further weaken human development outcomes by limiting opportunities for individuals to improve their quality of life.

Therefore, policies aimed at expanding employment opportunities are essential for improving human development performance. Government initiatives that promote job creation, support entrepreneurship, and enhance workforce skills can help reduce unemployment and strengthen human development outcomes in the province.

The Simultaneous Effect of Poverty and Unemployment on the Human Development Index

The results of the regression analysis indicate that the poverty rate and the open unemployment rate jointly influence the Human Development Index in West Nusa Tenggara Province. This finding suggests that both variables play an important role in shaping the overall level of human development.

Poverty and unemployment are closely interconnected socioeconomic issues. High unemployment often contributes to increased poverty, while persistent poverty can limit individuals' ability to access education and employment opportunities. As a result, both factors can simultaneously hinder improvements in human development.

Human development theory emphasizes that improving people's welfare requires integrated policies that address multiple dimensions of socioeconomic conditions. Reducing poverty without improving employment opportunities may not produce sustainable improvements in human development. Similarly, increasing employment opportunities without addressing poverty may not fully improve living standards.

Previous research has also highlighted the importance of addressing poverty and unemployment simultaneously in order to improve human development outcomes (Todaro & Smith, 2009). Effective development strategies should therefore focus on creating inclusive economic growth that benefits all segments of society.

In the case of West Nusa Tenggara Province, integrated development policies are required to strengthen human development performance. Programs aimed at poverty reduction, employment creation, and human capital development should be implemented simultaneously to achieve sustainable improvements in the Human Development Index.

CONCLUSION

This study examines the influence of the poverty rate and the open unemployment rate on the Human Development Index in West Nusa Tenggara Province during the period 2010–2024. The findings indicate that socioeconomic conditions related to poverty and employment opportunities play an important role in determining the level of human development in the region.

The empirical results show that the poverty rate has a negative and statistically significant effect on the Human Development Index in West Nusa Tenggara Province. Higher levels of poverty tend to limit the ability of households to access essential services such as education, healthcare, and adequate living standards, which are the fundamental components of human development. As a result, areas with higher poverty levels generally experience slower progress in improving the Human Development Index.

The analysis also reveals that the open unemployment rate has a negative and significant relationship with the Human Development Index. Higher unemployment reduces household income opportunities and weakens economic stability, thereby constraining individuals' capacity to invest in education, health, and other aspects that support improvements in quality of life. This

condition illustrates the important role of employment opportunities in supporting sustainable human development.

When analyzed simultaneously, the poverty rate and the open unemployment rate jointly influence the Human Development Index in West Nusa Tenggara Province. These findings suggest that poverty and unemployment are closely interconnected socioeconomic challenges that shape the overall level of human development. Regions characterized by high poverty and limited employment opportunities tend to experience greater difficulty in improving education attainment, health outcomes, and living standards.

Overall, the results emphasize that improving the Human Development Index in West Nusa Tenggara Province requires integrated development strategies that address both poverty reduction and employment creation. Policies that promote inclusive economic growth, expand productive employment opportunities, and strengthen access to education and healthcare services are essential to support sustainable improvements in human development across the region.

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