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THE EFFECT OF MEAN YEARS OF SCHOOLING, OPEN UNEMPLOYMENT RATE AND POVERTY ON THE HUMAN DEVELOPMENT INDEX IN JAVA ISLAND 2015-2024

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Abstract:
This study aims to analyze the effect of Mean Years of Schooling, Open Unemployment Rate, and Poverty on the Human Development Index in Java Island from 2015 to 2024. The data used is secondary data, with the analysis method used being panel data regression, and the model selected is the Fixed Effect Model. The econometric testing includes classical assumption testing, as well as t-tests, F-tests, and the coefficient of determination (R^2) to test the hypothesis. The results show that Mean Years of Schooling has a significant positive effect on the Human Development Index, while Open Unemployment Rate and Poverty have a significant negative effect. This study proves that these three variables simultaneously have a significant impact on human development in Java, where improvements in education quality drive the human development index, while high unemployment and poverty are major obstacles to the human development index that must be addressed immediately.

Keywords: Human Development Index, Mean Years of Schooling, Open Unemployment Rate, Poverty.

INTRODUCTION

Development is essentially an effort to bring about positive change. The goal is to improve current conditions so that they are more acceptable and beneficial in the future. However, in the context of human development, no form of development will mean much if it is not accompanied by an improvement in the quality of human resources (Ginting et al., 2023). The Human Development Index (HDI) is a composite indicator used to assess the extent to which human life has been achieved. The HDI is composed of three main components, namely education, health, and decent quality of life (BPS, 2021). Indonesia still faces challenges in equalizing the quality of human development in each region. Regional disparities are still evident, mainly because human development is uneven, especially on the island of Java, which is divided into six provinces, namely Banten, DKI Jakarta, West Java, Central Java, DI Yogyakarta, and East Java. Each province has different social, economic, and human development characteristics, so mapping and analyzing human development achievements in each province is important to understand the existing disparities.

During the period 2015-2024, DKI Jakarta Province recorded the highest HDI on the island of Java at 83.08. Although DKI Jakarta recorded the highest HDI, there are still other provinces on the island of Java, such as Central Java and East Java, which have relatively lower HDI of 73.88 and 74.09. This shows that there is a gap in human development between provinces. A high HDI does not always reflect an equitable quality of life across all segments of society. There are still groups of people who have difficulty accessing quality education, adequate health services, and decent

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employment opportunities. The gap between urban and rural areas also remains, meaning that human development is not yet fully equitable. Supported by research (Wedayanti et al., 2023) which found that students in rural schools have lower reading skills than students in urban areas due to limited resources, teaching methods, and family support.

According to the United Nations Development Program (UNDP), one of the main indicators for measuring the Human Development Index (HDI) is education. Formal education is one measure of human resource quality, with mean years of schooling used as an indicator to assess the level of educational progress in a region (Halean et al, 2021). The low quality of human resources has an impact on individuals' knowledge and skills, resulting in low productivity. This then affects employment opportunities, where individuals with low levels of education usually occupy lower positions or even experience unemployment. As a result, their ability to meet their daily needs is limited, increasing the risk of poverty (Pradipta & Dewi, 2020).

Data on Mean Years of Schooling (MYS) in Java released by the Badan Pusat Statistik shows an increase, but it is not yet evenly distributed. DKI Jakarta has reached 11.49 years, while Central Java is only around 8.02 years. This difference illustrates the gap in educational attainment between provinces, where education is a key factor in overcoming poverty and empowering individuals (Bukhari et al., 2024). The unevenness in mean years of schooling reflects differences in access to education between regions, which has the potential to affect the Human Development Index (HDI) on the island of Java.

In addition to education, other factors that hinder human development are open unemployment and poverty (Ningrum et al., 2020). Based on BPS data for the period 2015–2024, the open unemployment rate in provinces on the island of Java continues to fluctuate. The province with the highest unemployment rate in 2024 is West Java at 6.75 percent. Banten and DKI Jakarta also still have relatively high open unemployment rates in 2024, at 6.68 percent and 6.21 percent, respectively. Relatively high unemployment limits purchasing power, access to education, and health services, thereby potentially hindering HDI improvement. This is a serious issue because it not only reduces people's purchasing power but also increases the risk of poverty, social instability, and hinders improvements in quality of life.

Another socioeconomic issue that affects the Human Development Index is the poverty rate. Data from BPS for 2015-2024 shows that poverty rates across all provinces fluctuate from year to year. Poverty rates in several provinces remain at a fairly high level. For example, Central Java recorded a poverty rate of 13.32 percent in 2015, and although this declined to 9.58 percent in 2024, this percentage is still relatively high and worrying, as it shows that millions of people have not yet been freed from economic constraints. A similar situation occurred in East Java, which recorded a poverty rate of 12.28 percent in 2015 and experienced a decline to 9.56 percent in 2024. Even the Special Region of Yogyakarta (DIY) shows a worrying condition, as for almost a decade its poverty rate has not fallen below 10 percent, standing at 10.40 percent in 2024. This situation illustrates that poverty on Java Island is not merely a statistical issue, but rather a dangerous structural problem that can hinder people's access to education, healthcare, and increased purchasing power (Sari & Nuraini, 2020). If this issue is not addressed seriously, human development on Java Island will face obstacles and potentially widen social inequality.

A number of previous studies have examined the factors that influence the HDI, but the results show varying findings. Findings from Singh et al. (2025) and Raffi (2025) shows that the mean years of schooling has a positive and significant effect on HDI. However, findings from Soleha & Faizin (2023) and Manurung & Hutabarat (2021) mean years of schooling had a negative and

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significant effect. Another study conducted by Susich (2024) and Ningrum et al. (2020) shows that unemployment has a negative and significant effect on HDI, different studies by Prahasta et al. (2023) states that unemployment has a positive and significant effect. Furthermore, a study from Pratama et al. (2025) and Le-Bao et al. (2025) shows that poverty has a negative and significant effect, while studies from Khairunnisa et al. (2023) indicating a positive and significant effect on the HDI.

The differences in results found in various previous studies indicate research gaps that need to be further explored, prompting a reassessment of the factors that influence the Human Development Index (HDI). This study reexamines the relationship between mean years of schooling, open unemployment rate, and poverty on the human development index in the specific context of Java Island during the period 2015–2024. Java Island is the region with the largest contribution to the national economy and has a relatively high level of human development compared to other regions in Indonesia. However, there are still disparities between provinces, as reflected in variations in unemployment, poverty, and educational attainment rates.

This phenomenon shows that the increase in mean years of schooling in several regions has not been fully able to significantly reduce unemployment and poverty rates, which in turn can affect the achievement of the human development index (HDI) in these regions. This condition raises questions about the extent to which these three factors influence each other and contribute to the quality of human development on the island of Java. Therefore, this study was conducted to provide a more comprehensive understanding of the relationship between these variables, while filling the literature gap related to the dynamics of human development on the island of Java, which has complex and diverse socioeconomic characteristics.

OPERATIONAL DEFINITION

a. Human Development Index

According to Amartya Sen in his 1999 book Development as Freedom, development is not only defined as an increase in per capita income or economic growth, but also as a process of expanding freedom and human capabilities (capability approach). Development as an effort to improve individuals ability to live the life they value, includes the fulfillment of basic needs, improvement of the quality of education and health, and freedom from various forms of structural constraints (Indarti, 2017). This view is in line with the concept of human development introduced by the United Nations Development Programme (UNDP) through the 1990 Global Human Development Report, which defines human development as the process of expanding people's life choices so that they have the opportunity to live long and healthy lives, acquire knowledge, and participate in productive activities to improve their well-being (UNDP, 1990).

The Human Development Index (HDI) measures human development achievements through three main components, namely health, education, and decent living standards. The health component is measured using Life Expectancy at Birth (LEB), while the education component is measured through Mean Years of Schooling (MYS) and Expected Years of Schooling (EYS). A decent standard of living is measured based on per capita expenditure adjusted for purchasing power parity (PPP), which reflects the real ability of the community to meet their basic needs (BPS, 2024). Furthermore, Kuncoro (2006) stating that unemployment and poverty rates are the main factors affecting the HDI, where unemployment reflects the low utilization of human resources, and poverty limits access to education and health care, which affect the welfare of the community. Based on the criteria BPS (2024), HDI is classified into four categories: low (less than 60), medium (60–70), high (70–80), and very high (more than 80).

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b. Mean Years of Schooling

Mean Years of Schooling (MYS) is an indicator that describes the average number of years spent by people aged 25 years and above in formal education at various levels. This indicator reflects the level and quality of education in a region and plays an important role in assessing human development achievements. The level of MYS is influenced by various factors, including dropout rates, families' economic ability to finance education, social conditions, awareness of the importance of education, culture, and the availability of educational facilities and infrastructure (BPS, 2024).

The concept of Mean Years of schooling (MYS) is rooted in the Human Capital Theory proposed by Schultz (1961) In his work Investment in Human Capital, he states that education, skills, and health are forms of investment in human capital that can increase the productivity of individuals and society. Investment in education plays an important role in driving economic growth and strengthening a nation's competitiveness, because quality human resources are the key to improving welfare and economic development (Arifin, 2023).

c. Open Unemployment Rate

According to BPS (2021) Unemployed persons are persons aged 15 years and over who are not working, are seeking work, are preparing to start a business, or are waiting to start work. The open unemployment rate is the percentage of unemployed people in the total labor force, which reflects the effectiveness of labor absorption in the economy (Kuncoro, 2010).

In the context of human development, Sen (1999) The Capability Approach theory emphasizes that development is not solely measured by an increase in income, but rather by the expansion of individual freedom to determine a life that is valuable to oneself. Unemployment in this context is not merely a loss of income, but a form of deprivation of capabilities that reduces a person's freedom and quality of life. Amartya Sen states that unemployment has non-material impacts such as decreased self-esteem, weakened motivation, mental health problems, and reduced social participation. These conditions have a direct impact on the three main dimensions of the Human Development Index (HDI), namely health, education, and decent living standards. Thus, the higher the unemployment rate, the more hampered the improvement of the HDI in a region.

d. Poverty

Poverty is a condition in which individuals or groups are unable to meet their basic needs to achieve a minimum standard of living (Kuncoro, 2010). According to BPS (2011) Poverty is defined as a condition in which a person or group of people are unable to fulfill their basic rights to maintain and develop a dignified life. These basic rights include food, health, education, employment, housing, clean water, and security from the threat of violence.

Economically, poverty reflects limitations in meeting basic needs, both food and non-food, as measured by the Poverty Line. Poverty is not solely related to low income and consumption levels, but also reflects limitations in access to education, health services, and low individual capacity to actively participate in the development process. These dimensions of poverty are reflected in various aspects of life, such as malnutrition, limited access to clean water, inadequate housing conditions, poor quality of health services, and low levels of education (Kiha et al., 2021).

According to Kuncoro (2010), Poverty is generally caused by three main factors, namely inequality in resource ownership, low quality of human resources, and limited access to capital. These three factors ultimately lead to the theory of the vicious circle of poverty proposed by Ragnar Nurkse in 1953. Underdevelopment, market imperfections, and limited capital result in low productivity. This low level of productivity results in low incomes for the community. Low incomes

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then lead to low savings and investment, which in turn further reinforce the conditions of underdevelopment.

METHODS

This study uses quantitative methods, with secondary data in the form of panel data, which is a combination of time series data and cross-sectional data (Widarjono, 2013). To analyze the data, this study uses panel data regression analysis. The selected research location is the island of Java, which consists of six provinces, namely Banten, DKI Jakarta, West Java, Central Java, DI Yogyakarta, and East Java. This study analyzes data from 2015 to 2024.

The data used in this study includes mean years of schooling, open unemployment rate, poverty, and human development index published by the Badan Pusat Statistik (BPS). In addition, this study is also supported by relevant literature, including books, scientific journals, articles, and other publications related to the research topic.

Mathematically, the regression model used in this analysis can be written as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Description:

Y	= Dependent Variable (Human Development Index)
α	= Constant
β(1,2,3)	= Regression coefficient of each independent variable.
X1	= Independent Variable 1 (Mean Years of Schooling)
X2	= Independent Variable 2 (Open Unemployment Rate)
X3	= Independent Variable 3 (Poverty)
i	= Provinces on the Island of Java (Cross-Section)
t	= 2015-2024 (Time Series)
e	= Error Term

This study uses E-Views 12 software to conduct three stages of testing, namely testing the panel data model estimation using the Chow test and Hausman test, testing classical assumptions through normality, multicollinearity, heteroscedasticity, and autocorrelation tests, and testing research hypotheses covering the t-test (partial test), F-test (simultaneous test), and coefficient of determination (R^2).

RESULT AND DISCUSSION

In this study, the panel data regression model was estimated using three approaches, namely the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). The selection of the most appropriate panel data regression model is done by considering the characteristics of the data through model selection tests. The models analyzed include the Common Effect Model, Fixed Effect Model, and Random Effect Model. Model selection tests are performed using the Chow Test, Hausman Test, and Lagrange Multiplier Test, so that the selected model can produce valid and accountable analyses.

Model Selection Test.

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Chow Test. This test is used to determine the best regression model between the common effect model (CEM) and the fixed effect model (FEM) that is most appropriate for use in panel data analysis.

Table 1. Chow Test

Effect Test		Statistic	d.f	Prob.
Cross-section F		49.537705	(5,51)	0.0000
Cross-section Chi-square		106.054540	5	0.0000

Source: Processed data (2025)

Based on the test results, the cross-section Chi-Square probability value is 0.0000 < 0.05. Thus, the most appropriate and suitable model to use in the analysis is the Fixed Effects Model (FEM).

Hausman Test. This test aims to determine the most appropriate regression model between the fixed effect model (FEM) and the random effect model (REM) in panel data analysis.

Table 2. Hausman Test

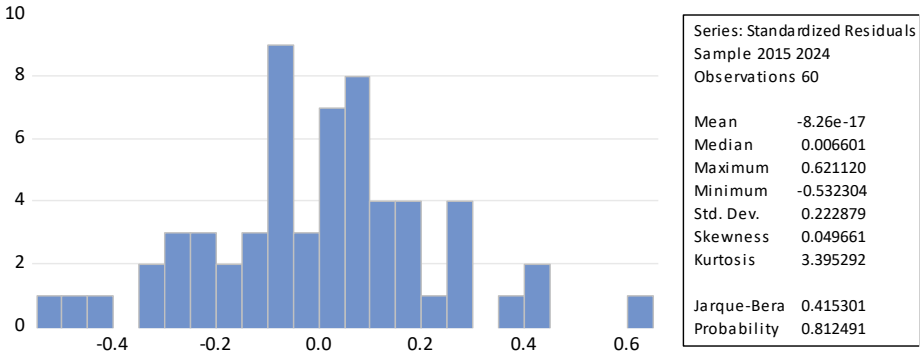
Effect Test	Chi-sq. Statistic	Chi-sq. d.f	Prob.
Cross-section Random	175.199037	3	0.0000

Source: Processed data (2025)

The Hausman test results presented in the table show that the cross-section random probability value is 0.0000 < 0.05. This confirms that the most appropriate model for this study is the Fixed Effects Model. Given that the test results show that the Fixed Effects Model is the best model, the Lagrange Multiplier test is not necessary. Thus, the Fixed Effects model is selected as the analytical framework used to estimate all research variables. Therefore, classical assumption tests are required, including tests for normality, multicollinearity, heteroscedasticity, and autocorrelation.

Classical Assumption Test, Normality Test. This test aims to examine whether the regression model, both the independent and dependent variables, has a normal distribution or not. If the significance probability value is greater than 0.05, then the residuals in this study are declared to have a normal distribution (Ghozali, 2021).

Table 3. Normality Test



Source: Processed data (2025)

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Based on the results of the normality test, it shows that the Jarque Bera probability value is 0.812491 > 0.05, indicating that the data is normally distributed.

Multicollinearity Test. This test is conducted to detect the existence of relationships or correlations between independent variables in the model. If the data processing results show a correlation value between variables of less than 0.85, it can be concluded that there is no multicollinearity.

Table 4. Multicollinearity Test

	X1	X2	X3
X1	1.000000	0.186029	-0.642663
X2	0.186029	1.000000	-0.691540
X3	-0.642663	-0.691540	1.000000

Source: Processed data (2025)

The multicollinearity test results presented in the table show that the correlation coefficient between variable X1 (Mean Years of Schooling) and variable X2 (Open Unemployment Rate) is 0.186029 < 0.85, so it can be concluded that there is no multicollinearity between Mean Years of Schooling and Open Unemployment Rate. The correlation coefficient between variable X1 (Mean Years of Schooling) and variable X3 (Poverty) is -0.642663 < 0.85, so it can be concluded that there is no multicollinearity between Mean Years of Schooling and Poverty. Variables X2 (Open Unemployment Rate) and X3 (Poverty) have a correlation coefficient of -0.691540 < 0.85, so it can be concluded that there is no multicollinearity between the Open Unemployment Rate and Poverty.

Heteroscedasticity Test. This test aims to determine whether there is a difference in residual variance in the regression model. If the residual variance is constant, it is called homoscedasticity, whereas if it varies, it is called heteroscedasticity. A good regression model is one that does not experience heteroscedasticity (Ghozali, 2021).

Table 5. Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.349589	0.658652	0.530764	0.5979
X1	0.006999	0.059915	0.116815	0.9075
X2	-0.014958	0.018195	-0.822099	0.4148
X3	-0.017180	0.025378	-0.676967	0.5015

Source: Processed data (2025)

Based on the results in the table, the probability value of each independent variable is > 0.05. This means that this regression model does not detect any heteroscedasticity issues.

Autocorrelation Test. According to Savitri et al. (2021) and Santoso (2010) This test aims to determine whether there is a correlation between the disturbance error value in period (t) and the disturbance error value in the previous period (t-1) in a linear regression model. A good multiple regression equation does not show autocorrelation in its regression model. The decision in the autocorrelation test is made by observing the Durbin-Watson (D-W) value as follows:

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1) If the D-W value is < -2, it indicates positive autocorrelation.
2) If the D-W value is between -2 and +2, it indicates no autocorrelation.
3) If the D-W value is > +2, it indicates positive autocorrelation.

Table 6. Autocorrelation Test

Durbin-Watson stat	0.887949

Source: Processed data (2025)

Based on the results in the table, the D-W (Durbin Watson) value is 0.887949. This indicates that the D-W (Durbin-Watson) value is between -2 and +2, meaning that there is no autocorrelation (non-autocorrelation).

Table 7. Panel Data Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	42.02116	1.225587	34.28656	0.0000
X1	3.907796	0.111486	35.05177	0.0000
X2	-0.136943	0.033856	-4.044908	0.0002
X3	-0.115014	0.047223	-2.435552	0.0184

Source: Processed data (2025)

The table shows the panel data regression equation as follows:

$$Y_{it} = 42.02116 + 3.907796X1 - 0.136943X2 - 0.115014X3$$

Panel Data Regression. The constant value of 42.02116 represents the human development index value when the mean years of schooling, open unemployment rate, and poverty are assumed to be zero. The coefficient X1 (mean years of schooling) is 3.907796, meaning that a 1% increase in mean years of schooling will cause a 3.907796 increase in the human development index, assuming that the open unemployment rate and poverty rate remain constant. The coefficient X2 (open unemployment rate) is -0.136943, meaning that a 1% increase in the open unemployment rate will cause a decrease in the human development index of -0.136943, assuming that the mean years of schooling and poverty remain constant. Meanwhile, the coefficient of X3 (poverty) of -0.115014 indicates that a 1% increase in poverty will decrease the human development index by -0.115014, assuming that the mean years of schooling and open unemployment rate remain constant.

Hypothesis.

Table 8. T-Test (Partial)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	42.02116	1.225587	34.28656	0.0000
X1	3.907796	0.111486	35.05177	0.0000
X2	-0.136943	0.033856	-4.044908	0.0002
X3	-0.115014	0.047223	-2.435552	0.0184

Source: Processed data (2025)

Based on the table above, it is known that the calculated t-value for the mean years of schooling (X1) is 35.05177 > t-table 2.00324 with a probability value of 0.0000 < 0.05. Thus, the mean years of schooling have a positive and significant effect on the human development index. These results are in line with previous studies Singh et al. (2025) and Raffi (2025) shows that the mean years

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of schooling has a positive and significant effect on HDI, but this is not in line with the research Soleha & Faizin (2023) which states that the mean years of schooling has a significant negative effect.

Furthermore, the calculated t-value for the open unemployment rate (X2) is -4.044908 > t table 2.00324 with a probability value of 0.0002 < 0.05. This indicates that the open unemployment rate has a negative and significant effect on the human development index. These results are supported by Soleha & Faizin (2023), Naibaho & Nabila (2021) and Ningrum et al. (2020) who state that the open unemployment rate has a negative and significant effect. However, the results differ from those of Saputra & Lubis (2023) which explain that there is a positive and significant effect.

Meanwhile, the t-value for poverty (X3) is -2.435552 > t-table 2.00324, with a probability value of 0.0184 < 0.05. Therefore, poverty has a negative and significant effect on the human development index. The research by Pratama et al. (2025) supports these results, while the different results from Khairunnisa et al. (2023) state that there is a positive and significant effect of poverty on the human development index.

Table 9. F Test (Simultaneous)

R-squared	0.997262	Mean dependent var	74.70483
Adjusted R-squared	0.996833	S.D. dependent var	4.259591
S.E of regression	0.239723	Akaike info criterion	0.118815
Sum squared resid	2.930820	Schwarz criterion	0.432966
Log likelihood	5.435561	Hannan-Quinn criter.	0.241697
F-statistic	2322.139	Durbin-Watson stat	0.887949
Prob (F-statistic)	0.000000		

Source: Processed data (2025)

Based on the F test results in the table above, the f-statistic value obtained is 2322.139, which is greater than the F table value of 2.77, and has a Prob (F-statistic) value of 0.0000 < 0.05. Thus, it can be concluded that the variables of mean years of schooling, open unemployment rate, and poverty simultaneously have a significant effect on the human development index.

Coefficient of Determination Test. The determination coefficient (R^2) test was conducted to measure the contribution of the independent variables collectively in explaining the dependent variable. A high R^2 value indicates the greater ability of the independent variables to explain the variation that occurs in the dependent variable.

Based on the calculation results, an Adjusted R Square value of 0.996833 or 99.6833% was obtained, indicating that the variables of mean years of schooling, open unemployment rate, and poverty were able to explain 99.6833% of the variation in the human development index variable, while the remaining 0.3167% is explained by other factors outside this research model.

The Effect of Mean Years of Schooling on the Human Development Index. The results of the study show that mean years of schooling (MYS) has a positive and significant effect on the Human Development Index (HDI). These findings indicate that the higher the level of education attained by the population, the higher the quality of human development in a region. Theoretically, education is one of the main components of human development because it can increase an individual's capacity to acquire knowledge, skills, and the ability to adapt to economic and social changes. When a person has a higher level of education, the chances of getting a job with a decent income also increase, thereby contributing to an increase in the purchasing power and standard of living of the community.

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For example, regions such as DKI Jakarta have the highest mean years of schooling in Java, at 11.43 years, which is in line with the highest HDI achievement of 83.08 percent. This condition shows that investment in the education sector has a real impact on improving the quality of life of the community. Good education not only produces a more productive and innovative workforce, but also raises public awareness of the importance of health, nutrition, and social welfare.

From a development economics perspective, the positive relationship between mean years of schooling and human development index can be explained through human capital theory, which emphasizes that education is a form of long-term investment that increases individual productivity and economic growth. Therefore, increasing the mean years of schooling not only has an impact on social aspects, but also has significant economic implications. However, the government needs to ensure that increasing the length of schooling is accompanied by good quality education so that the positive effects on HDI are not only quantitative but also substantive in building sustainable competitiveness and community welfare.

These findings are in line with the research by Singh et al. (2025), Raffi (2025), Rodiyah et al. (2025), Hasibuan et al. (2023) and Alifah & Imaningsih (2022) which shows that the mean years of schooling has a positive and significant effect on HDI. Higher levels of education indicate better access to education, improved literacy skills, and the formation of an educated workforce. Thus, the results of this study reinforce the Human Capital theory, which explains that education is an investment that improves the quality and productivity of individuals. However, these findings differ from the research conducted by Soleha & Faizin (2023) and Manurung & Hutabarat (2021) who found that mean years of schooling have a negative and significant effect on HDI.

The Effect of Open Unemployment Rate on the Human Development Index. The results of the study show that the open unemployment rate has a negative and significant effect on the Human Development Index (HDI). This means that the higher the unemployment rate in a region, the lower the quality of human development. Economically, this condition can be explained by the fact that high unemployment indicates low absorption of productive labor, which has an impact on declining community income and purchasing power. As a result, communities find it difficult to meet basic needs such as education and health, two major components of the HDI. This is understandable because unemployment has an impact on declining human welfare, which limits individuals' access to quality education, reduces health and mental well-being due to stress and limited ability to obtain health services, reduces labor productivity and household income, which has an impact on low living standards, and hinders community participation in productive economic activities.

This is in line with the Capability Approach theory proposed by Sen (1999) which emphasizes that development is not only measured by an increase in income, but also by the expansion of individual freedom to determine a life that is meaningful to oneself. In this framework, unemployment is not merely a loss of income, but a form of deprivation of capabilities that limits a person's freedom to participate productively in society. Amartya Sen also argues that unemployment not only has an economic impact, but also serious non-material consequences, such as a decline in self-esteem, weakened individual motivation, mental health problems, and reduced social participation in society. These impacts directly affect the three main dimensions that make up the Human Development Index (HDI), namely health, education, and decent living standards.

As a concrete example, the Special Region of Yogyakarta (DIY) has the lowest open unemployment rate on the island of Java at 3.48 percent and a high HDI of 81.55 percent. Meanwhile, West Java has a higher unemployment rate of 6.75 percent, with a lower HDI of 74.43 percent. This

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difference shows that rising unemployment rates have the potential to reduce the quality of human development because individuals who are not working lose their source of income and opportunities to improve their welfare. This situation limits access to education, health services, and the fulfillment of basic needs, which ultimately depresses HDI achievements. In addition, high unemployment can also have social and psychological impacts, such as decreased motivation, self-esteem, and community social participation. Thus, reducing the open unemployment rate is an important factor in promoting improved quality of life and sustainable human development.

This is in line with research conducted by Susich (2024), Shoolihah & Musyaropah (2024), Naibaho & Nabila (2021), Ningrum et al. (2020) and Runtunuwu (2020) which found a negative and significant effect of the open unemployment rate on the human development index. However, these findings differ from the research conducted by Indianti et al. (2024), Saputra & Lubis (2023) and Primandari (2019) which states that the open unemployment rate has a positive and significant effect.

The Effect of Poverty on the Human Development Index. The results of the study show that poverty has a negative and significant impact on the Human Development Index (HDI). Empirically, an increase in poverty has been proven to lower HDI scores because people living below the poverty line have limited access to education, health services, and decent economic opportunities. This condition creates structural barriers to improving the quality of human resources. An example can be seen in Central Java Province, which has a high poverty rate of 9.58 percent and a relatively low HDI achievement of 73.88 percent. This condition shows that the higher the poverty rate, the more limited the community's ability to invest in improving their quality of life. The inability to meet educational and health needs has an impact on the low quality of human resources, which ultimately suppresses the region's HDI achievement.

Theoretically, the negative relationship between poverty and HDI can be explained through the vicious circle of poverty theory proposed by Ragnar Nurkse (1953). This theory states that poverty is self-reinforcing, meaning that poverty tends to be perpetuated because one factor exacerbates another. Low income results in low capacity for people to save and invest in education and health. As a result, the quality of human resources declines, productivity weakens, and people's income remains stagnant at a low level. In the long term, this condition creates obstacles in the process of human development due to the weak economic foundation that should support improved welfare. In addition, poverty also exacerbates social inequality and limits intergenerational social mobility, where children from poor families have fewer opportunities to access higher education and obtain decent jobs, so that the cycle of poverty continues to repeat itself from one generation to the next.

Efforts to reduce poverty are not only important for reducing economic inequality, but also form the foundation for developing high-quality, competitive human resources. Local governments in Java need to strengthen policies on local economic empowerment, expand access to quality education, and improve basic health services so that human development can take place in an inclusive and sustainable manner. In addition, synergy between the government, the private sector, and the community is also needed to create a development ecosystem that can break the chain of poverty and promote equitable welfare improvement. Research by Pratama et al. (2025), Le-Bao et al. (2025) and Al-Nasser & Al Hallaq (2019) supports the findings that poverty has a negative and significant effect on the human development t index. However, there is a different study by Khairunnisa et al. (2023) and Ningrum et al. (2020) which states that poverty has a positive and significant effect on the Human Development Index.

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CONCLUSION

Based on the results of research conducted in six provinces on the island of Java during the period 2015-2024, it can be concluded that the variables of Mean Years of Schooling (MYS), Open Unemployment Rate (OUR), and Poverty Rate simultaneously and partially have a significant effect on the Human Development Index (HDI). Specifically, mean years of schooling (MYS) has been proven to have a positive and significant effect on the HDI. This indicates that investment in education, as reflected in the increase in the mean years of schooling of the population, is a key factor in promoting the quality of human development. Conversely, the open unemployment rate (OUR) and poverty were found to have a negative and significant effect on the human development index (HDI). High unemployment not only limits income and purchasing power but also reduces access to health and education services, thereby hindering overall welfare improvement. Meanwhile, multidimensional poverty creates a vicious cycle that limits individuals capabilities to participate fully in development. With a coefficient of determination (Adjusted R^2) of 99.68%, these three independent variables are able to explain almost all of the variation in the human development index (HDI), leaving very little room for other factors outside the model. These findings reinforce the Human Capital and Capability Approach theories, which emphasize education as an investment and freedom from deprivation such as unemployment and poverty as prerequisites for sustainable human development. In addition, the results of this study are also in line with the Poverty Vicious Cycle theory, which explains that poverty is a structural obstacle to improving human capabilities and quality of life.

Recommendations. Based on the findings of this study, an integrated human development strategy is needed by strengthening the education, employment, and poverty alleviation sectors to improve the Human Development Index (HDI) on the island of Java. In the education sector, the government should enhance participation and quality through infrastructure improvements, teacher competency development, and curriculum adjustments to include skills such as digital literacy, entrepreneurship, and green skills, including strengthening the Merdeka Belajar (Freedom to Learn) program and Technical and Vocational Education and Training (TVET) to bridge the gap between graduates and labor market needs. In the employment sector, policies should focus on expanding productive employment opportunities through link and match programs between educational institutions and industry, revitalizing Balai Latihan Kerja (BLK) for vocational training, providing incentives for companies that absorb young workers, and developing the creative, digital, and micro entrepreneurship sectors.

In addressing poverty, the focus should shift from short-term assistance to sustainable economic empowerment through the integration of social protection programs with access to business capital, training, and business mentoring. Community based enterprises can help poor households start or develop micro enterprises as a group, reducing business risks, fostering mutual support, and facilitating access to capital and markets. Strengthening Kredit Usaha Rakyat (KUR) as additional capital and empowering local cooperatives to enhance the collective economic capacity of the community allows the benefits of business activities to be shared widely. This approach promotes increased income, reduces dependence on social assistance, and fosters economic independence, although success requires adequate mentoring, training, and risk management to ensure sustainable poverty alleviation outcomes. For future research, it is recommended to include other relevant variables or use different research periods and regions to obtain more comprehensive results regarding the dynamics of human development in Indonesia.

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