

Article

Village funds, human development, and unemployment as determinants of poverty

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Keywords: poverty, village fund, human development index, open unemployment rate, East Java

Abstract

Persistent poverty disparities across East Java highlight the need to examine fiscal transfers, human development, and labour market conditions within a common analytical framework. This study investigates the associations of Village Funds, the Human Development Index (HDI), and the open unemployment rate with poverty rates across 29 regencies in East Java Province, Indonesia, in 2025. A quantitative design was employed using secondary cross-sectional data and multiple linear regression, with Village Funds expressed in natural logarithms. The results show that HDI was negatively and significantly associated with poverty, whereas Village Funds and open unemployment exhibited statistically insignificant associations. The explanatory variables were jointly significant, and the model accounted for 54.0% of the variation in poverty rates. These findings identify human development as a relevant correlate of regional poverty, while providing insufficient evidence of independent associations for fiscal transfers and unemployment within the sample. The analysis offers geographically focused evidence that can inform integrated poverty reduction strategies while recognising differences in local development conditions. Policy priorities should connect improvements in education, health, and living standards with productive village spending and employment opportunities. However, the cross-sectional design limits causal interpretation, and broader longitudinal evidence is needed to assess policy effectiveness and implementation mechanisms.

Introduction

Poverty remains a central challenge in Indonesia's development agenda. Beyond insufficient income, it involves restricted access to education, healthcare, and decent employment, which can reinforce household vulnerability and constrain opportunities for improving living standards. These interconnected disadvantages make poverty reduction a concern that extends across economic and social policy (Septiadi & Nursan, 2020). Research on Indonesia similarly highlights the relevance of economic activity, unemployment, and human development, indicating the need for coordinated responses to the factors associated with deprivation (Leonita & Sari, 2019).

East Java provides an important setting for examining these relationships. Despite its substantial contribution to Indonesia's economy, the province continues to face considerable poverty and uneven welfare outcomes. Statistics Indonesia reported that approximately 3.87 million residents, equivalent to 9.50% of the provincial population, lived below the poverty line in March 2025 (Badan Pusat Statistik Provinsi Jawa Timur, 2025). Although this represented a decline from the preceding reporting period, the remaining scale of deprivation underscores the importance of understanding why poverty persists across local economies.

The provincial pattern also includes a pronounced rural–urban disparity. In September 2024, the reported poverty rate was 13.19% in rural areas and 6.83% in urban areas (Badan Pusat Statistik Provinsi Jawa Timur, n.d.). This difference indicates that provincial averages can conceal substantial variation in local welfare conditions. Rural areas may face distinct constraints concerning infrastructure, productive opportunities, and access to basic services, making geographically focused analysis relevant to policy design. Poverty also varies across regencies, suggesting that local development conditions deserve attention alongside provincial trends. Ilmi and Lathifah (2025) examine poverty disparities in East Java, providing a basis for considering this regional heterogeneity.

Village Funds constitute a fiscal instrument intended to support development at the village level. Introduced in 2015 through the national budget, the programme supports infrastructure, community

empowerment, and local development activities. Its potential contribution to poverty reduction operates through improvements in access, productive capacity, and economic participation. [Sigit and Kosasih \(2020\)](#) examine the relationship between Village Funds and poverty at the regency and city level in Indonesia, establishing the relevance of village fiscal transfers to regional poverty analysis.

Nevertheless, the amount of funding alone cannot fully describe the benefits received by communities. The relationship between Village Funds and poverty may depend on expenditure priorities, implementation quality, and the extent to which funded activities reach disadvantaged households. Research by [Wahyunadi et al. \(2023a\)](#) examines Village Fund distribution and poverty reduction in Lombok, providing complementary evidence from a different regional context. These considerations suggest that fiscal transfers should be assessed alongside the social and economic conditions that may shape their contribution to local welfare.

Human development represents a second dimension of the analysis. The Human Development Index (HDI) combines indicators of health, education, and living standards to summarise development achievements. Higher educational attainment and better health can strengthen productive capabilities, while improvements in living standards reflect broader welfare conditions. [Padmono \(2025\)](#) examines HDI in relation to poverty, supporting its relevance to regional deprivation. Research by [N. L. Sari \(2023a\)](#) also considers human development alongside labour market and poverty indicators in the analysis of economic growth.

However, HDI should be interpreted carefully because its living-standard component is conceptually related to the economic resources underlying monetary poverty. A negative HDI–poverty association may therefore reflect both capability-related pathways and overlapping dimensions of welfare measurement. Examining this association remains informative, but it does not by itself establish that improvements in a composite index cause poverty reduction. Distinguishing these interpretations is particularly important when using aggregate regional data.

Labour market conditions provide a third dimension. The open unemployment rate measures the proportion of the labour force classified as unemployed and indicates the extent to which available labour remains unabsorbed into employment. Unemployment can weaken household earning capacity and increase vulnerability to deprivation. [Sagala et al. \(2023\)](#) and [Agustina \(2020\)](#) examine unemployment in relation to poverty, providing a basis for considering this expected connection. [Ardina \(2024\)](#) similarly includes open unemployment in an analysis of poverty in East Java.

The relationship is nevertheless unlikely to be uniform across local economies. Employment status does not fully capture earnings, working hours, productivity, or job security. Individuals may remain poor despite being employed, while unemployed individuals may receive support from other household members. Consequently, the open unemployment rate provides an important but incomplete representation of labour market disadvantage. This distinction helps explain why poverty and unemployment may display different regional patterns.

Existing research in East Java has examined human development, unemployment, and economic growth in relation to poverty ([Rakhmawan & Aji, 2022](#)). [Febrianti and Utami \(2025\)](#) further investigate open unemployment, HDI, and minimum wages. These studies demonstrate that the proposed variables belong to an established research agenda, while also indicating that estimated relationships may depend on the geographical coverage, observation period, and model specification. The present study builds on this literature by examining village fiscal transfers alongside human development and unemployment within a common regency-level framework.

The study's contribution is therefore primarily contextual and empirical. It focuses on the 29 regencies of East Java in 2025, excluding municipalities to maintain a scope more closely aligned with the village development policy under investigation. This focus enables an assessment of whether differences in Village Funds, HDI, and open unemployment are associated with differences in poverty across regencies. It does not imply that similar combinations of variables have never been studied, nor does the cross-sectional design capture changes in poverty over time.

Accordingly, this study examines the individual and joint associations of Village Funds, HDI, and the open unemployment rate with poverty rates across the 29 regencies. By integrating fiscal, human development, and labour market indicators, it provides geographically focused evidence to inform discussion of regional poverty reduction. The findings are expected to support policies that connect productive village spending with improvements in education, health, and employment opportunities, while recognising that causal policy evaluation requires evidence beyond contemporaneous regional associations.

Literature Review

Poverty. Poverty involves insufficient resources to meet basic needs and restricted opportunities to participate in economic and social life. Absolute poverty concerns deprivation relative to a minimum standard of subsistence, whereas relative poverty concerns disadvantage in relation to prevailing social standards. This distinction highlights the importance of considering both material deprivation and the social context in which households live (Hanum, 2018). A multidimensional perspective further recognises that income, education, health, and access to productive resources can jointly shape vulnerability (Lubis, 2017).

The poverty-trap perspective explains how low income, limited savings, insufficient investment, and low productivity can reinforce one another. Households with inadequate resources may struggle to finance education, maintain health, or invest in productive activities, restricting their capacity to improve future earnings. Research on multidimensional poverty in Indonesia provides a relevant context for examining these interconnected constraints (Kause & Fithriyah, 2024).

The capability approach broadens this explanation by distinguishing economic resources from the substantive opportunities available to individuals. Poverty involves limitations on the ability to pursue valued activities and achieve acceptable living conditions. Education and health therefore matter as components of welfare and as resources that support economic participation. Adon et al. (2023) discuss the relevance of capability deprivation to the empowerment of disadvantaged communities.

These perspectives provide complementary foundations for the present study. Village Funds represent a potential source of public investment, HDI summarises human development achievements, and open unemployment reflects one aspect of access to employment. However, the dependent variable remains the monetary poverty rate. Including explanatory variables from several development dimensions does not itself constitute a direct measurement of multidimensional poverty.

Village Funds. Village Funds are fiscal transfers intended to support development and community empowerment at the village level. Their relevance to poverty can be understood through rural development and fiscal decentralisation perspectives. Rural development emphasises improvements in productive opportunities, infrastructure, services, and local participation. Rizkwanti and Kurniawan (2025) discuss integrated rural development in Indonesia, providing a framework for understanding how these components may jointly support community welfare.

Public investment financed through Village Funds may reduce constraints on economic participation. Infrastructure improvements can facilitate access to markets and services, while community empowerment activities may strengthen local productive capacity. Maumabe et al. (2022) examine community empowerment through Village Funds, illustrating the relevance of implementation processes to poverty-oriented development.

Fiscal decentralisation offers an additional explanation. Allocating resources closer to communities may improve the responsiveness of spending to local needs, provided that planning, accountability, and administrative capacity are adequate (Santika et al., 2025). Village Funds consequently offer a potential mechanism for aligning public expenditure with local development priorities. Studies by Wahyunadi et al. (2023a) and Warda et al. (2024) provide relevant perspectives on fund distribution, management, and poverty reduction.

The transmission of investment benefits nevertheless requires examination. Witari and Saidi (2023) discuss distributional processes associated with development, highlighting the relevance of how economic benefits reach different groups. For Village Funds, the analytical question is whether financed activities improve opportunities and living conditions among disadvantaged households.

The amount of funding alone cannot establish these outcomes. Total regency-level funding may reflect the number of villages, population size, or allocation criteria, while actual benefits depend on expenditure composition and implementation. The relationship between Village Funds and poverty is therefore expected to be conditional on how resources are allocated and used.

Human Development Index. The human development perspective places improvements in people's lives at the centre of development. It evaluates progress through the expansion of opportunities and capabilities rather than aggregate economic output alone. Azis (2025) discusses this orientation in relation to Mahbub ul Haq's contribution to human-centred development. The capability perspective similarly emphasises individuals' opportunities to achieve valued living conditions (Gumela & Qomar, 2025).

HDI summarises achievements in health, education, and living standards. Its educational dimension reflects capabilities that may support access to information, skills development, and employment opportunities. Better health can strengthen participation in productive activities and

reduce vulnerability associated with illness. Together, these dimensions provide a theoretical basis for expecting higher human development to coincide with lower poverty.

Research by [Zahra et al. \(2024\)](#) examines HDI and open unemployment in relation to poverty in Lampung. [Fadila and Kurniawati \(2025\)](#) also investigate education, health, unemployment, and poverty in Indonesia. These studies provide empirical context for considering human development and labour market conditions within a common framework, although their geographical coverage and measures differ from those used here.

HDI is not exclusively a non-economic indicator because it incorporates living standards. This component is conceptually related to the resources underlying monetary poverty, so part of the association may reflect overlapping welfare dimensions. HDI should therefore be interpreted as a composite development indicator whose relationship with poverty may combine capability-related pathways and measurement overlap. The present study examines this aggregate association without identifying the separate contribution of each HDI component.

Open Unemployment Rate. The open unemployment rate measures the proportion of the labour force classified as unemployed. It captures an aspect of labour market exclusion, while providing limited information about the earnings and employment conditions of those who work ([Yulia, 2022](#)). Its expected relationship with poverty arises principally through the loss or absence of labour income.

From a Keynesian perspective, insufficient aggregate demand can reduce production and labour demand, increasing involuntary unemployment. [Meiriza et al. \(2024\)](#) discuss Keynesian economic reasoning, providing a background for understanding demand-related constraints on employment. Okun's law concerns the relationship between unemployment and economic output rather than a direct relationship between unemployment and poverty. [Pasaribu \(2022\)](#) examines this output-unemployment relationship in Indonesia, offering complementary macroeconomic context.

At the household level, unemployment may increase poverty risk when alternative income sources are inadequate. However, unemployment and poverty do not necessarily coincide. Unemployed individuals may receive support from other household members, whereas employed individuals may remain poor because of low earnings, insufficient working hours, or unstable employment. Informal employment can also provide income without guaranteeing adequate living standards. These distinctions indicate why employment status alone cannot fully describe economic deprivation.

Research by [Yanti et al. \(2020\)](#) considers human capital investment alongside unemployment and economic growth, while [Prasetya and Sumanto \(2022\)](#) examine unemployment and labour in relation to poverty through economic growth. These contributions support consideration of the wider economic conditions connecting employment opportunities and household welfare. The open unemployment rate consequently remains relevant to poverty analysis, but its association may vary across local labour markets. The present study includes it as an indicator of employment access while recognising that job quality, household income arrangements, and other sources of vulnerability are not directly captured.

Hypothesis Development

Village Funds and Poverty. Village Funds may contribute to poverty reduction by relaxing infrastructure and resource constraints in rural communities. Investment in roads, public facilities, and essential services can improve access to markets and reduce barriers to productive participation. Community empowerment activities may also support local enterprises and strengthen income-generating opportunities. These mechanisms are consistent with the integrated rural development perspective discussed by [Rizkwanti and Kurniawan \(2025\)](#) and the community empowerment approach examined by [Maumabe et al. \(2022\)](#).

Fiscal decentralisation provides a further rationale for expecting a poverty-reducing association. Local planning can align expenditure with community needs, potentially improving the relevance of public investment ([Santika et al., 2025](#)). Research on Village Fund distribution and management also highlights their relevance to poverty-oriented development ([Wahyunadi et al., 2023a; Warda et al., 2024](#)).

However, this expectation depends on funding reaching activities that benefit disadvantaged households. Larger transfers may not correspond to better outcomes when expenditure priorities, implementation capacity, or beneficiary access are inadequate. Funding may also be higher in areas with greater development needs, complicating the observed relationship. Despite these qualifications, the proposed investment and empowerment mechanisms support a negative directional hypothesis, holding human development and unemployment constant.

H1: Village Funds are negatively associated with the poverty rate.

Human Development Index and Poverty. Higher human development can strengthen the capabilities needed to access productive opportunities and maintain household welfare. Educational achievements may improve skills and informed decision-making, while better health can support sustained economic participation. The human development and capability perspectives therefore provide a basis for expecting higher HDI to coincide with lower deprivation (Azis, 2025; Gumela & Qomar, 2025).

Research examining HDI, education, and health in relation to poverty provides complementary empirical context (Zahra et al., 2024; Fadila & Kurniawati, 2025). These relationships suggest that differences in development achievements may help explain poverty variation across regencies. Nevertheless, the living-standard component of HDI overlaps conceptually with monetary welfare, and the composite index does not isolate educational or health mechanisms. The hypothesis therefore concerns the overall association between HDI and poverty rather than a causal effect attributable to a specific development intervention. Holding Village Funds and open unemployment constant, higher HDI is expected to be associated with lower poverty rates.

H2: The Human Development Index is negatively associated with the poverty rate.

Open Unemployment Rate and Poverty. Labour income is an important resource for meeting household needs. When individuals are unable to obtain employment, household earning capacity may decline, increasing vulnerability to monetary poverty. Demand-related constraints on employment provide one potential explanation for this relationship, while the broader output–unemployment connection offers supporting macroeconomic context (Meiriza et al., 2024; Pasaribu, 2022).

The strength of the association depends on household circumstances. Income from other members, savings, or social support may buffer unemployment-related pressures. Conversely, poverty may persist among employed residents whose earnings remain insufficient. The mechanisms connecting unemployment, economic growth, and poverty should therefore be interpreted within local labour market conditions (Prasetya & Sumanto, 2022). These qualifications do not remove the theoretical expectation that reduced access to employment can weaken household resources. Holding Village Funds and HDI constant, a higher open unemployment rate is consequently expected to be associated with a higher poverty rate.

H3: The open unemployment rate is positively associated with the poverty rate.

Methods

This study employed a quantitative cross-sectional design to examine the associations of Village Funds, the Human Development Index (HDI), and the open unemployment rate with poverty rates across 29 regencies in East Java Province in 2025. Secondary data on poverty, HDI, and unemployment were obtained from Statistics Indonesia (BPS), while Village Fund data were sourced from the Directorate General of Fiscal Balance (DJPK), Ministry of Finance, Republic of Indonesia. Data were collected through documentation and compiled into a regency-level dataset.

Multiple linear regression was used to estimate the following model:

$$POV_i = \beta_0 + \beta_1 \ln(VF_i) + \beta_2 HDI_i + \beta_3 UR_i + \varepsilon_i$$

Here, POV_i denotes the poverty rate (%) in regency i , VF_i represents Village Funds, HDI_i denotes the Human Development Index, and UR_i represents the open unemployment rate (%). The terms β_0 , β_1 , β_2 , and β_3 represent the intercept, regression coefficients, and error term, respectively. Village Funds were transformed using the natural logarithm. Consequently, a 1% increase in Village Funds corresponds approximately to a $\beta_1/100$ percentage-point change in the poverty rate. The HDI coefficient represents the change associated with a one-point increase in the index, while the unemployment coefficient represents the change associated with a one-percentage-point increase in unemployment.

Diagnostic testing assessed residual normality, multicollinearity, and heteroskedasticity. Individual coefficients were evaluated using two-sided t-tests, while the F-test assessed whether the three explanatory variables were jointly significant. Statistical significance was evaluated at the 5% level. The coefficient of determination R^2 summarised the proportion of observed poverty-rate variation explained by the model. Given the observational cross-sectional design, the estimates were interpreted as conditional associations rather than causal effects.

Result and Discussion

The analysis covers 29 regencies in East Java Province in 2025. The results are presented sequentially, beginning with descriptive statistics, followed by regression diagnostics, individual hypothesis tests, overall model significance, and model fit.

Descriptive Analysis. The descriptive assessment examines the distribution of poverty rates, Village Funds, the Human Development Index (HDI), and the open unemployment rate across the study area. Table 1 presents the regency-level observations used in the regression analysis.

Table 1. Poverty Rates, Village Funds, Human Development, and Open Unemployment across East Java Regencies, 2025

Regency	Poverty rate (%)	ln(Village Funds)	HDI	Open unemployment rate (%)
Pacitan	12.97	18.92143	72.26	1.40
Ponorogo	8.86	18.09316	74.65	3.85
Trenggalek	10.29	17.78616	73.39	3.86
Tulungagung	5.96	19.35766	75.88	4.03
Blitar	7.57	19.29391	74.43	4.49
Kediri	9.81	19.73641	76.09	4.71
Malang	8.78	19.94687	74.45	5.00
Lumajang	8.60	19.20459	71.02	3.08
Jember	8.67	19.58739	71.57	3.07
Banyuwangi	6.13	19.29505	75.17	3.94
Bondowoso	12.20	19.16716	71.72	2.55
Situbondo	11.17	18.79152	71.87	3.02
Probolinggo	16.31	19.60783	71.65	2.92
Pasuruan	8.21	19.68080	73.02	4.22
Sidoarjo	4.40	19.64672	83.35	5.75
Mojokerto	8.79	19.50080	77.46	3.49
Jombang	8.36	19.56147	76.37	3.28
Nganjuk	10.06	19.39924	75.89	3.84
Madiun	10.40	19.07696	75.47	3.22
Magetan	9.14	19.05367	77.58	3.26
Ngawi	13.62	19.23029	74.43	2.26
Bojonegoro	11.49	19.79948	73.74	3.90
Tuban	14.13	19.54253	73.15	3.44
Lamongan	12.03	19.83796	76.81	4.29
Gresik	9.95	19.57277	79.69	5.47
Bangkalan	18.25	19.45891	68.15	5.31
Sampang	20.61	19.18181	67.23	2.44
Pamekasan	12.77	19.07286	71.64	1.33
Sumenep	17.02	19.63140	70.54	1.64

Source: Statistics Indonesia and the Directorate General of Fiscal Balance, Ministry of Finance, as compiled in the study dataset.

Poverty rates ranged from 4.40% in Sidoarjo to 20.61% in Sampang, a difference of 16.21 percentage points. HDI also differed substantially, with Sidoarjo recording the highest value of 83.35 and Sampang the lowest value of 67.23. These contrasting observations suggest an inverse pattern between human development and poverty, although comparisons between individual regencies do not establish a general statistical relationship.

The natural logarithm of Village Funds ranged from 17.78616 in Trenggalek to 19.94687 in Malang. Because logarithmic transformation compresses differences in monetary values, this range should not be interpreted as evidence of an approximately equal distribution of funding. The open unemployment rate ranged from 1.33% in Pamekasan to 5.75% in Sidoarjo. Sidoarjo's combination of relatively high unemployment and low poverty illustrates why the unemployment rate alone may not correspond directly to regional poverty levels.

These descriptive differences provide the context for the regression analysis. Before interpreting the estimates, diagnostic tests were examined to assess residual behaviour and relationships among the explanatory variables.

Residual Normality. The Shapiro–Wilk test was used to assess whether the regression residuals departed significantly from a normal distribution. Table 2 reports the significance value provided in the original analysis.

Table 2. Residual Normality Test

Test	p-value	Decision at the 5% level
Shapiro–Wilk	0.338	Normality not rejected

Source: Supplied SPSS output.

The p-value of 0.338 exceeded 0.05, providing insufficient evidence to reject the null hypothesis of normally distributed residuals. This result supports the residual normality assumption under the test used, but does not establish that all regression assumptions are satisfied. The next diagnostic examined whether strong linear relationships among the explanatory variables could affect the precision of the coefficient estimates.

Multicollinearity. Tolerance and variance inflation factor (VIF) values were assessed for each explanatory variable. Table 3 presents these indicators using the stated reference criteria of tolerance above 0.10 and VIF below 10.

Table 3. Multicollinearity Diagnostics

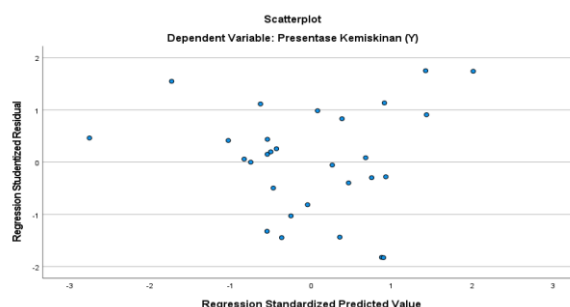
Variable	Tolerance	VIF
ln(Village Funds)	0.925	1.081
Human Development Index	0.721	1.388
Open unemployment rate	0.687	1.455

Source: Supplied SPSS output;

All tolerance values exceeded 0.10, and all VIF values were below 10. These results indicate no severe multicollinearity under the adopted criteria. The explanatory variables therefore did not exhibit linear dependence sufficiently strong to trigger concern on this diagnostic basis. Following the multicollinearity assessment, the residual scatterplot was examined for evidence of non-constant variance.

Heteroskedasticity Assessment. The heteroskedasticity assessment used the scatterplot of standardised residuals against standardised predicted values. Figure 1 presents the diagnostic plot used to examine whether residual dispersion changed systematically across fitted values.

Fig 1.
Standardised Residuals
against Standardised
Predicted Values
Source: SPSS output.



The original analysis reported that the residual points were dispersed above and below zero without an apparent systematic pattern. This visual assessment did not indicate pronounced heteroskedasticity. However, the absence of a visible pattern does not conclusively establish constant residual variance, particularly in a sample of 29 observations. With the reported diagnostics showing no clear departure from normality, no severe multicollinearity, and no pronounced visual evidence of heteroskedasticity, the regression estimates were examined next.

Regression Estimates and Individual Hypothesis Tests. Multiple linear regression assessed the associations of Village Funds, HDI, and open unemployment with poverty rates. Table 4 presents the coefficient estimates, standard errors, individual significance tests, and decisions for the three directional hypotheses.

Table 4. Multiple Linear Regression Estimates and Hypothesis Decisions

Variable	Coefficient (B)	Standard error	t-statistic	p-value	Hypothesis decision
Constant	44.4915	23.9683	1.856	0.0752	—
ln(Village Funds)	1.2342	1.1037	1.118	0.2741	H1 not supported

Human Development Index	−0.7537	0.1798	−4.193	0.0003	H2 supported
Open unemployment rate	−0.4410	0.5356	−0.823	0.4181	H3 not supported

Source: OLS calculations using the supplied dataset of 29 regencies.

Village Funds exhibited a positive but statistically insignificant coefficient ($B = 1.2342$; $p = 0.2741$). Since funding was expressed in natural logarithms, a 1% increase in Village Funds was associated with an approximately 0.0123 percentage-point increase in the poverty rate, holding HDI and unemployment constant. However, the estimate provides insufficient evidence of an independent association within the sample. The hypothesised negative relationship was therefore not supported.

HDI exhibited a negative and statistically significant coefficient ($B = -0.7537$; $p = 0.0003$). A one-point increase in HDI was associated with an approximately 0.754 percentage-point decrease in the poverty rate, holding the other explanatory variables constant. This result supports H2.

The open unemployment rate had a negative but statistically insignificant coefficient ($B = -0.4410$; $p = 0.4181$). The estimated direction differed from the hypothesised positive relationship, but the evidence was insufficient to establish an association. H3 was therefore not supported. This result should not be interpreted as demonstrating that unemployment reduces poverty.

The estimated regression equation was:

$$\widehat{POV}_i = 44.4915 + 1.2342 \ln(VF_i) - 0.7537HDI_i - 0.4410UR_i$$

The intercept represents the predicted poverty rate when all model regressors equal zero. Because this combination lies outside the observed conditions, the constant has limited substantive relevance. Individual coefficient tests identify which variables were statistically associated with poverty after adjustment for the others. The following assessment considers whether the explanatory variables were jointly significant.

Overall Model Significance. The F-test evaluated the null hypothesis that all three slope coefficients were simultaneously equal to zero. Table 5 presents the analysis of variance and the overall significance test.

Table 5. Analysis of Variance and Overall Regression Significance

Component	Sum of squares	df	Mean square	F-statistic	p-value
Regression	209.560	3	69.853	9.782	0.0002
Residual	178.533	25	7.141	—	—
Total	388.093	28	—	—	—

Source: OLS calculations using the supplied dataset.

The model was jointly significant, $F(3, 25) = 9.782$, $p = 0.0002$. The null hypothesis was therefore rejected, indicating that at least one explanatory variable contributed statistically to explaining poverty-rate variation. Joint significance does not imply that all three variables were individually significant, nor does it demonstrate interactions between them.

After establishing overall significance, model fit was evaluated to determine how much of the observed poverty-rate variation was captured by the specification.

Model Fit. Table 6 reports the multiple correlation coefficient, coefficient of determination, adjusted coefficient of determination, and residual standard error.

Table 6. Regression Model Summary

Indicator	Value
R	0.735
R ²	0.540
Adjusted R ²	0.485
Standard error of the estimate	2.672
Number of observations	29

Source: OLS calculations using the supplied dataset.

The model explained approximately 54.0% of the observed variation in poverty rates across the 29 regencies. After adjustment for the number of explanatory variables and observations, the explained proportion was approximately 48.5%. The remaining variation was not captured by the specification and may reflect omitted characteristics, measurement differences, and other unobserved influences.

The residual standard error was approximately 2.672 percentage points, describing the dispersion of observed poverty rates around the fitted values. These measures summarise in-sample fit and do not establish causal validity or predictive accuracy outside the sample. Overall, HDI was the only explanatory variable with a statistically significant individual association with poverty, while Village Funds and open unemployment were not individually significant.

Discussion

The results identify human development as a significant correlate of poverty across the 29 regencies of East Java in 2025. Village Funds and open unemployment, however, did not exhibit statistically significant individual associations. These findings distinguish the relationships observed in the dataset from the mechanisms proposed by development theory. They provide geographically focused evidence, while leaving questions concerning policy implementation, delayed benefits, and household responses open to further investigation.

Village Funds and Poverty. Village Funds exhibited a positive but statistically insignificant coefficient, providing insufficient evidence to support the hypothesised negative association with poverty. This result does not demonstrate that Village Funds failed to improve community welfare. It indicates that differences in aggregate funding were not independently associated with poverty rates after accounting for HDI and unemployment within the specified model.

The rural development perspective provides a rationale for expecting public investment to improve infrastructure, productive opportunities, and access to services. However, the availability of funding and the benefits ultimately received by disadvantaged households represent different stages of the development process. Improvements in infrastructure or productive capacity may take time to influence household resources. Because the study uses observations from a single year, it cannot determine whether funding generated delayed benefits or whether previous allocations contributed to current welfare conditions.

Fiscal decentralisation similarly suggests that locally informed expenditure can improve responsiveness to community needs. Its potential benefits nevertheless depend on planning, administrative capacity, accountability, and community participation. Studies examining Village Fund utilisation and community welfare provide relevant context for these implementation considerations (Pangke et al., 2021; Kaligis et al., 2024). Rizki (2026) also discusses local government policy effectiveness in poverty reduction. These sources support examining how resources are used, although they do not establish the explanation for the insignificant coefficient in the present study.

A further consideration concerns the measurement of funding. Aggregate regency-level Village Funds may differ because of the number of villages, population size, or allocation criteria. Larger totals do not necessarily indicate greater resources per resident or per disadvantaged household. Funding may also be directed towards areas with greater development needs, potentially complicating the observed association. Consequently, the positive coefficient should not be interpreted as evidence that higher funding increases poverty.

The practical implication is to evaluate expenditure composition and beneficiary access alongside funding totals. Programme assessments could examine whether village investment improves market access, supports productive activities, and reaches vulnerable households. Future analysis using per-capita funding, expenditure categories, and lagged allocations would help clarify the pathways connecting Village Funds and poverty.

Human Development and Poverty. HDI was negatively and significantly associated with poverty. Holding Village Funds and unemployment constant, a one-point increase in HDI corresponded to an approximately 0.754 percentage-point decrease in the poverty rate. This result supports the hypothesised inverse relationship and indicates that differences in human development achievements were relevant to poverty variation within the sample.

The capability approach offers a theoretical interpretation of this association. Better education and health can expand the opportunities available to individuals, strengthen productive participation, and reduce vulnerability. The human development perspective similarly places improvements in people's lives at the centre of development. From these viewpoints, the negative association is consistent with the expectation that stronger capabilities coincide with lower deprivation.

The result also complements research examining HDI and poverty in other regional settings. [Laoh et al. \(2023\)](#), for example, investigate GRDP and HDI in relation to poverty in Bolaang Mongondow. Such comparisons support the relevance of human development to regional poverty analysis, while recognising that estimates may differ across geographical contexts and model specifications.

However, HDI includes a living-standard component alongside education and health. Its relationship with monetary poverty therefore partly involves conceptually overlapping dimensions of welfare. The estimated coefficient cannot isolate the contribution of educational attainment, health improvements, or living standards. Nor does it establish that an intervention raising the composite index would produce an equivalent reduction in poverty.

HDI was the only variable with a statistically significant individual coefficient, but this does not establish it as the strongest causal determinant or the most cost-effective policy instrument. Statistical significance depends on effect size, variation, measurement, and estimation precision. The findings nevertheless support attention to educational quality, healthcare access, and the opportunities through which improved capabilities can translate into better living conditions.

Open Unemployment and Poverty. The open unemployment rate exhibited a negative but statistically insignificant coefficient. The evidence therefore did not support the hypothesised positive association. Equally, the estimated sign does not demonstrate that unemployment reduces poverty. It indicates that the model could not establish an independent relationship between unemployment and poverty within the observed sample.

The absence of a significant association highlights the distinction between individual employment status and household deprivation. Unemployed individuals may receive support from other household members, while employed individuals may remain poor because of low wages, unstable work, or insufficient working hours. These are plausible mechanisms, but the present dataset does not contain the household or employment-quality information needed to test them.

Keynesian reasoning provides a framework for understanding unemployment arising from insufficient aggregate demand. Nevertheless, the study does not measure demand conditions and cannot determine whether this mechanism explains differences across regencies. Similarly, Okun's law concerns the relationship between unemployment and economic output; it does not directly establish how unemployment relates to poverty. The present finding should therefore not be interpreted as confirming or rejecting either theoretical relationship.

The result is consistent with the reported insignificant unemployment associations discussed in studies by [Alfikri et al. \(2025\)](#) and [Aini and Islamy \(2021\)](#). These comparisons suggest that the unemployment–poverty relationship may vary across settings. They do not, however, confirm that informal employment or household support caused the insignificant result in East Java. For policy assessment, unemployment indicators should be complemented by measures of earnings, underemployment, working hours, and employment security. Improving access to work remains relevant, but poverty-oriented employment strategies also require attention to whether available jobs provide adequate and reliable income.

Overall Model Interpretation and Policy Implications. The model was jointly significant and explained approximately 54.0% of the observed variation in poverty rates, with an adjusted R^2 of 48.5%. These results indicate that the explanatory variables collectively provided information about regional poverty differences. Joint significance means that at least one slope coefficient differed from zero; it does not demonstrate that all three variables mattered individually or that interactions between them were present.

Research by [Supit et al. \(2023\)](#) and [Widodo et al. \(2019\)](#) provides broader context for modelling poverty using multiple regional indicators. The present study contributes to this approach by considering village fiscal transfers, human development, and unemployment together. However, including variables from different development dimensions does not constitute a direct test of multidimensional poverty or establish complementarities between policy instruments.

The findings support closer coordination between village spending, human development services, and productive employment opportunities. Village investment can be assessed in terms of the constraints it addresses, while education and health policies can strengthen residents' capacity to participate in local economic activities. Employment policy can then focus on the quality and accessibility of income-generating opportunities. These recommendations follow from the theoretical mechanisms and observed associations rather than a causal evaluation of specific programmes.

Interpretation remains limited by the small sample, single-year design, aggregate measures, and potential omitted variables or reverse relationships. In particular, the contemporaneous specification cannot distinguish delayed policy benefits from responsive funding allocations. Panel data, household-level evidence, and more detailed implementation indicators would strengthen

future analysis and help identify the conditions under which development policies contribute to poverty reduction.

Conclusion

This study examined the associations of GRDP per capita, mean years of schooling, and realised social assistance expenditure with poverty in five selected regencies of Lampung Province during 2018–2024. The logarithmic fixed effects estimates showed negative and statistically significant associations for GRDP per capita and mean years of schooling, whereas social assistance expenditure exhibited a positive but statistically insignificant association. The model, including regency fixed effects, explained approximately 91.46% of the variation in the logarithm of poverty rates. These findings support coordinated policies that expand productive employment opportunities, improve educational access and quality, and strengthen social assistance targeting and delivery. The insignificant assistance coefficient does not establish programme ineffectiveness or confirm that expenditure responded to higher poverty; recipient-level and implementation data are needed to assess these explanations. The study is limited by its small sample, purposive selection of five regencies, seven-year observation period, aggregate indicators, and potential omitted variables and reverse causality. Future research should extend geographical and temporal coverage, examine employment and programme implementation mechanisms, and employ specifications that address common time effects, lagged relationships, and endogeneity to strengthen the evidence informing regional poverty reduction.

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