

THE EFFECT OF FISCAL POLICY ON POVERTY THROUGH THE HUMAN DEVELOPMENT INDEX IN CENTRAL JAVA PROVINCE

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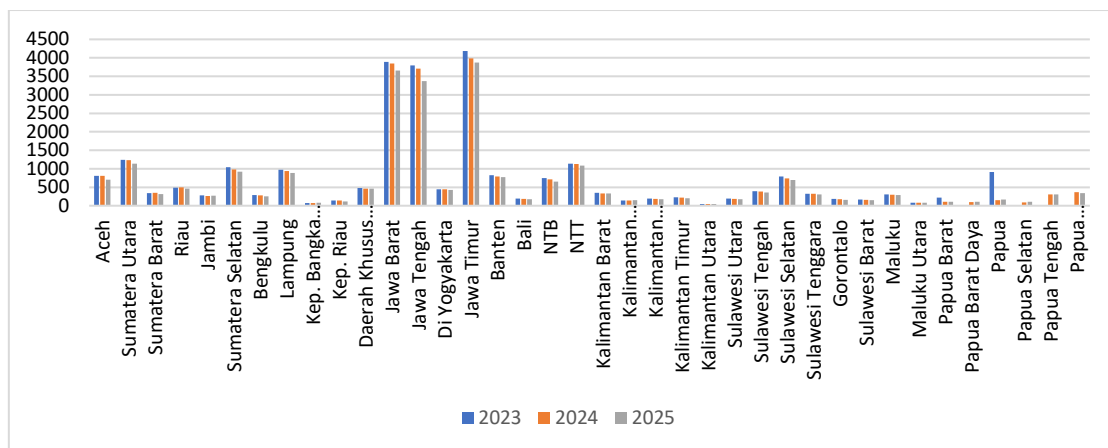
Abstract

This study examines the effects of regional government expenditure on education, health, social protection, economic functions, and the Village Fund on the Human Development Index (HDI) and poverty, including indirect mechanisms through HDI. Using panel data from 29 regencies in Central Java during 2020–2024 analyzed via Structural Equation Modeling (SEM) in AMOS 23, the results show that education, health, social protection, and economic expenditures have no significant direct effects on the poverty rate, while the Village Fund has a positive and significant effect on poverty. Regarding HDI, health and economic expenditures have positive and significant effects, whereas education and social protection expenditures are insignificant, and the Village Fund has a negative and significant effect. Furthermore, HDI has a strong negative and significant effect on poverty, indicating that improvements in human development contribute substantially to poverty reduction. The mediation analysis shows that health and economic expenditures significantly reduce poverty indirectly through HDI, while education and social protection expenditures do not have significant indirect effects. In contrast, the Village Fund has a significant positive indirect effect on poverty through HDI, consistent with its positive direct effect and suggesting potential reverse causality and suboptimal allocation. These findings highlight the importance of strengthening health and economic spending to improve human capital and reduce poverty, while the effectiveness and targeting of education, social protection, and Village Fund allocations require further evaluation.

Keywords: Poverty, Local Government Expenditure, Village Funds, Human Development Index, Structural Equation Model (SEM).

INTRODUCTION

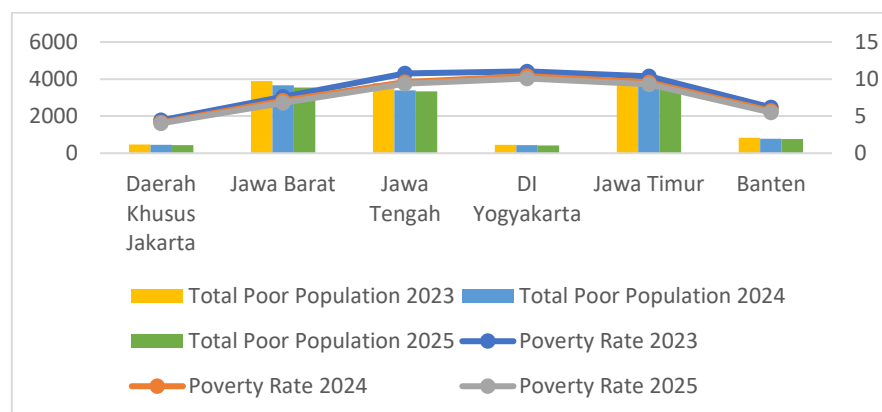
Poverty is a complex phenomenon related to limitations in the welfare of life. Economically, poverty is measured based on the inability to meet basic food and non-food needs through the poverty line (Statistics Indonesia, 2022). Consequently, poor population refers to those whose average monthly per capita expenditure falls below the Poverty Line. Todaro and Smith (2020) explain that poverty generates various social and economic impacts, such as limited access to education, health, employment opportunities, credit, as well as social and political participation. Although national aggregate figures show a decline in poverty, the main problem lies in spatial inequality between regions as shown in Figure 1.



Source: Statistics Indonesia(processed)

Figure 1. Number of Poor People by Province in Indonesia, 2023 –2025

Based on Figure 1, Java Island remains the largest contributor to national poverty, where East Java, Central Java, and West Java consistently serve as the largest contributors with absolute numbers far higher than provinces outside Java. The absolute concentration of poor people is still centered in Java, signaling significant spatial disparities behind the declining national trend.



Source: Statistics Indonesia (processed)

Figure 2. Poverty Rate and Total Poor Population by Province in Java Island, 2023 – 2025

Based on Figure 2, DI Yogyakarta recorded the highest poverty percentage in Java during the 2023–2025 period (11.04% in 2023, 10.40% in 2024, and 10.08% in 2025), followed closely below by Central Java (10.77% in 2023, 9.58% in 2024, and 9.39% in 2025). However, the absolute poor population in Central Java is continuously and substantially larger than in DI Yogyakarta. This scale difference demonstrates that the quantitative concentration of poverty is far greater in Central Java. Moreover, poverty in Central Java also exhibits a wide disparity across regencies/cities, as summarized in Table 1.

Table 1. Descriptive Statistics Poverty Rate and Total Poor Population districts/cities in Central Java Province 2025

Statistical Indicator	Value	Regional Description	Statistical Indicator	Value	Regional Description
Minimum	3,8	Semarang City	Minimum	6.930	Magelang City
Maximum	14,15	Brebes Regency	Maximum	257.290	Brebes Regency

Statistical Indicator	Value	Regional Description	Statistical Indicator	Value	Regional Description
Average (Mean)	9,19	-	Average (Mean)	96.190	-
Standard Deviation	2,28	-	Standard Deviation	53.570	-

Source: Statistics Central Java Province 2025 (processed)

Based on descriptive statistics for 2025, poverty across districts/cities in Central Java Province shows spatial disparities in both percentage and absolute figures. In terms of poverty rates, this region recorded an average of 9.19% with a standard deviation of 2.28, ranging from a minimum of 3.8% in Semarang City to a maximum of 14.15% in Brebes Regency. This geographic imbalance is further magnified by absolute figures, where the total poor population averaged 96,190 people per region with a high standard deviation of 53,570 with a minimum value of 6,930 people in Magelang City and a maximum of 257,290 people in Brebes Regency, indicating that the results of regional economic development are still distributed unevenly. In the context of regional poverty disparities, fiscal policy is crucial for correcting existing inequalities. One of the primary instruments is government expenditure, which plays a critical role in reducing poverty, particularly when allocated to sectors directly related to human development (Wahiba & Ahlem, 2022). At the rural level, this policy is implemented through the Village Fund to stimulate local economic activities that directly impact poverty alleviation (Ernawati et al., 2021).

Research on fiscal policy and poverty has been widely conducted. Linhartová (2020) Agussalim et al. (2024), and Wahyudi and Khotimah (2022) found that government expenditure and Village Funds significantly contribute to poverty reduction. However, Septriani et al. (2023) reported that education and health expenditures are positively associated with poverty, while Setiawan et al. (2024) found that Village Funds and the Human Development Index (HDI) have no significant effect on poverty. Regarding the relationship between fiscal policy and HDI, Suhyanto et al. (2020) and Harsono et al. (2024) identified a positive effect, meanwhile (Bandiyono, 2018) and Fernando and Yustie (2025) reported contrasting findings.

This study examines the effect of government expenditure allocated to education, health, social protection, and economic functions, as well as Village Funds, on poverty levels across 29 regencies in Central Java Province during 2020–2024, with the Human Development Index (HDI) serving as a mediating variable. The novelty of this study lies in the application of Structural Equation Modeling (SEM) to analyze both direct and indirect relationships simultaneously. Theoretically, this study contributes to the literature on the relationship between fiscal policy, human development, and poverty. Practically, the findings are expected to provide policy recommendations for central, provincial, and local governments in optimizing public expenditure allocation and Village Fund management to enhance the effectiveness of poverty reduction programs.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

This study uses Richard Musgrave's public finance theory, which states that governments must perform allocation, distribution, and stabilization functions to correct market failures and ensure that development benefits reach all levels of society equitably (Safitri et al., 2021). Furthermore, other theories can explain this poverty alleviation mechanism, such as human capital theory. This theory emphasizes that sustained investment in public welfare, particularly through quality education and healthcare, can systematically increase individual productivity and earning capacity (Becker, 1993). This occurs because when local governments optimize allocations for basic social services, they strengthen public capacity, enabling vulnerable communities to break the intergenerational cycle of poverty.

Poverty alleviation and human capital growth are influenced by several important fiscal factors. First, regional government spending is based on functions, which directly allocate regional budgets to critical sectors such as education, health, social protection, and the economy to improve the quality of human resources, expand employment opportunities, and increase public access to basic services (Aarich et al., 2025; Agussalim et al., 2024; Chakrabarti & Verguet, 2022; Linhartová, 2020; Miranda-Iescano & Roca-sagalés, 2023). Second, the allocation of village funds, which serves as a vital policy instrument to encourage inclusive economic growth, improve community welfare and expand access to education, health, and other basic facilities, which ultimately contribute to an increase in the Human Development Index and reduce poverty levels in rural areas (Awaludin & Wibowo, 2023; Ernawati et al., 2021; Suhyanto et al., 2020; Wahyudi & Khotimah, 2022). Third, the human development index, which reflects improvements in the quality of human resources based on the dimensions of education, health, and a decent standard of living, which in turn is expected to contribute to poverty reduction (Apriyanti & Rospida, 2025; Mauludi & Rahmawati, 2023; Muhamad & Rahmi, 2023; Setiawan et al., 2024). Based on the literature review and explanation above, the following hypothesis can be formulated:

- H1 : Local government expenditure education function has a negative effect on the poverty rate.**
- H2 : Local government expenditure healthcare function has a negative effect on the poverty rate.**
- H3 : Local government expenditure social protection function has a negative effect on the poverty rate.**
- H4 : Local government expenditure economic function has a negative effect on the poverty rate.**
- H5 : The Village Fund has a negative effect on the poverty rate.**
- H6 : HDI has a negative effect on the poverty rate.**
- H7 : Local government expenditure education function has a positive effect on HDI.**
- H8 : Local government expenditure healthcare function has a positive effect on HDI.**
- H9 : Local government expenditure social protection function has a positive effect on HDI.**
- H10 : Local government expenditure economic function has a positive effect on HDI.**
- H11 : The Village Fund has a positive effect on HDI.**

RESEARCH METHODS

This study uses a quantitative approach to analyze the relationships between local government expenditures (by Education, Healthcare, Social Protection, and Economic functions) and the Village Fund toward the Poverty Rate in the regencies of Central Java Province, using the Human Development Index (HDI) as a mediating variable. Using panel data that combines time-series data (2020–2024) and cross-section data (29 regencies), the Poverty Rate and HDI data are sourced from Statistics Indonesia (BPS), while the functional expenditures and Village Fund data are obtained from the Directorate General of Regional Fiscal Balance (DJPK), Ministry of Finance. The data collection technique used was documentation.

The data analysis technique used in this study is Covariance Based Structural Equation Modeling (CB-SEM), conducted using the AMOS 23 application. In addition, classical assumption tests are performed to ensure data validity, which include a normality test using skewness, kurtosis, and critical ratio (CR) values, alongside a multicollinearity test using the sample correlation matrix. Once the data passes the classical assumption tests, the model's suitability is evaluated through several Goodness of Fit indices, such as Chi-Square, CMIN/DF, GFI, AGFI, CFI, and RMSEA (Ghozali, 2017). Further analysis is then conducted by calculating the coefficient of determination (R^2) and performing hypothesis testing through individual regression coefficients (t-test) with a significance threshold of p value $< 0,05$. Finally, the mechanism of relationships is identified by decomposing

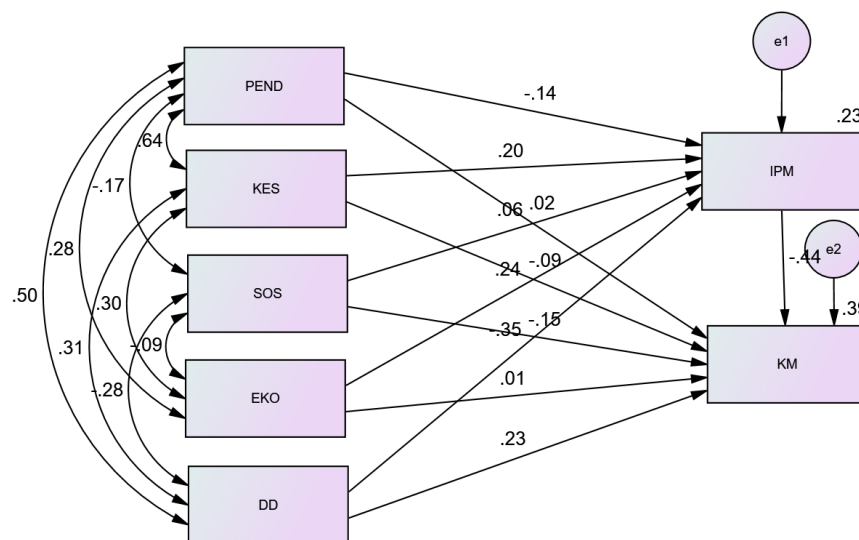
the results into direct, indirect (mediated by HDI), and total effects. The structural equations in this study can be written as follows:

$$KM_{it} = \beta_1 PENDING_{it} + \beta_2 KES_{it} + \beta_3 SOS_{it} + \beta_4 EKO_{it} + \beta_5 DD_{it} + \beta_6 IPM_{it} + \mu_{it} \dots \dots \dots (1)$$

$$IPM_{it} = \beta_7 PENDING_{it} + \beta_8 KES_{it} + \beta_9 SOS_{it} + \beta_{10} EKO_{it} + \beta_{11} DD_{it} + e_{it} \dots \dots \dots (2)$$

The endogenous variable used in this study is the poverty rate (KM), measured using the percentage of the poor population (%). The mediating variable used is human development index (HDI), measured in index units (0–100). The exogenous variables used is local government expenditure by education function (PEND), healthcare function (KES), social protection function (SOS), economic function (EKO), and village fund (DD), measured in Indonesian Rupiah (Rp).

RESULTS AND DISCUSSION



Source: Amos Output 23 Version

Figure 3. Path Analysis Diagram

Based on Figure 3, the structural equations representing the relationships among the variables are formulated as follows:

$$KM = 0,018PENDING - 0,088KES - 0,154SOS + 0,012EKO + 0,235DD - 0,439IPM \dots \dots \dots (3)$$

$$IPM = -0,140PENDING + 0,205KES + 0,059SOS + 0,244EKO + 0,345DD \dots \dots \dots (4)$$

From equation (3), education expenditures (PEND), economic (EKO) expenditures, and the Village Fund (DD) have a positive relationship with the Poverty Rate (KM), whereas healthcare expenditures (KES), social protection expenditures (SOS), and HDI show a negative relationship. Meanwhile, equation (4) indicates that local government education expenditures (PEND) and the Village Fund (DD) show a negative relationship with HDI, while healthcare (KES), social protection (SOS), and economic (EKO) display a positive relationship.

Table 2. Normality Test

Variable	Minimum	Maximum	Skew	c.r.	Kurtosis	c.r.
DD	136746086000	492478504000	.433	2.129	-.414	-1.018
EKO	47772386698	543829539683	.315	1.547	-.264	-.650
SOS	7492505100	128534628439	4.497	22.109	26.456	65.028
KES	155249816738	935323408997	1.068	5.249	2.504	6.155
PENDING	510394226077	1387413830398	.999	4.912	1.240	3.048
IPM	66.11	79.30	.268	1.317	-.583	-1.432

Variable	Minimum	Maximum	Skew	c.r.	Kurtosis	c.r.
KM	6.09	17.83	.275	1.353	-.845	-2.076
Multivariate					28.762	15.427

Source: Amos Output 23 Version

In the initial normality test, the multivariate critical ratio (c.r) reached 15.424, which significantly exceeded the ideal threshold of ± 1.96 , indicating that the data was not multivariate normally distributed due to extreme variations and scaling issues. To resolve this disparity of scale and minimize the impact of extreme values, all local government fiscal variables and the Village Fund were transformed into Natural Logarithms (LN). Furthermore, an outlier analysis using the Mahalanobis Distance (p_1 and $p_2 < 0.05$) identified 7 extreme observations that were subsequently removed from the dataset (Temanggung 2023, Kudus 2021, Kudus 2020, Klaten 2022, Kendal 2023, Grobogan 2023, and Banyumas 2022). By changing it to LN form and removing the outlier data, the normality and multicollinearity test results are as follows:

Table 3. Normality Test and Multicollinearity Test

Variable	min	max	skew	c.r.	kurtosis	c.r.
LN_DD	25.652	26.923	-.131	-.628	-.474	-1.136
LN_EKO	24.601	27.022	-.742	-3.560	-.132	-.316
LN_SOS	22.737	24.708	.142	.679	.131	.313
LN_KES	26.439	27.417	.434	2.080	.031	.075
LN_PEND	26.958	27.952	.331	1.585	-.163	-.390
IPM	66.110	79.300	.305	1.460	-.485	-1.163
KM	6.090	17.830	.270	1.293	-.875	-2.099
Multivariate					-.266	-.139

Multicollinearity		Estimates	
LN_EKO	<-->	LN_DD	0.113
LN_SOS	<-->	LN_DD	-0.318
LN_SOS	<-->	LN_EKO	-0.169
LN_KES	<-->	LN_DD	0.383
LN_KES	<-->	LN_EKO	0.401
LN_KES	<-->	LN_SOS	-0.173
LN_PEND	<-->	LN_DD	0.524
LN_PEND	<-->	LN_EKO	0.342
LN_PEND	<-->	LN_SOS	-0.188
LN_PEND	<-->	LN_KES	0.668

Source: Amos Output 23 Version

Based on Table 3, the final multivariate normality test yielded a c.r of -0.139, which falls safely within the ± 1.96 range, confirming that the data meets the assumption of multivariate normality. Additionally, the sample correlation matrix confirmed the absence of multicollinearity, as all correlation coefficients between the observed independent variables remained well below the 0.80 threshold (Ghozali, 2008). Following the completion of these classical assumption tests, the model's overall suitability was evaluated to ensure its eligibility for further structural analysis. The results of the Goodness of Fit testing are summarized in Table 4 below.

Table 4. Goodness of Fit Test

Goodness Of Fit Index	Cut off Value	Value	Explanation
Chi-Square	$\geq 0,05$	0,067	Good fit
CMIN/DF	< 2	2.696	Acceptable fit
GFI	$> 0,90$	0,989	Good fit
RMSEA	Between 0,05 to 0,08	0.111	Close fit
AGFI	$\geq 0,90$	0,843	Marginal Fit
CFI	$\geq 0,90$	0,987	Good fit

Source: Amos Output 23 Version

Based on Table 4, the structural suitability of the model was further confirmed by the Goodness of Fit metrics, which displayed a highly satisfying fit: Chi-Square reached 0.067 ($p > 0.05$, Good fit), CMIN/DF was 2.696 (Acceptable fit), GFI was 0.989 (Good fit), CF was 0.987 (Good fit), AGFI was 0.843 (Marginal fit), and RMSEA was 0.111 Close fit).

Table 5. R^2 Result, t-test, and Direct Effect

Variable	Direct Effect	p-value	R ²
Model 1: Poverty Rate (KM)			
IPM → KM	-.466*	.001	.382
LN_PEND → KM	.028	.776	
LN_KES → KM	-.131	.163	
LN_SOS → KM	-.122	.088	
LN_EKO → KM	.049	.522	
LN_DD → KM	.194*	.032	
Model 1: Human Development Index (HDI)			
LN_PEND → IPM	.382	.312	.322
LN_KES → IPM	.322*	.024	
LN_SOS → IPM	.382	.911	
LN_EKO → IPM	.322*	.002	
LN_DD → IPM	.382*	.001	

Source: Amos Output 23 Version

Notes: * Significant at $\alpha = 5\%$

Based on Table 5, the value R^2 for the poverty rate (KM) is 0.382, meaning that the model in the equation can be explained by exogenous variables of 38.2% and the remainder is explained by variables outside the model. Meanwhile, The model equation for the Human Development Index (HDI) can be explained by exogenous variables of 32.2% and the suitability is explained by variables outside the model. In the testing of direct effects on the poverty rate (KM), it is found that HDI has the strongest negative and significant effect of -0.466 ($p = 0.001$), which indicates that every increase in the quality of human resources is effectively able to reduce the poverty rate. On the other hand, the Village Fund (DD) shows a positive and significant effect on the poverty rate with a coefficient of 0.194 ($p = 0.032$). Meanwhile, the other function expenditure variables, namely economic expenditure (EKO) 0.049 ($p = 0.522$), healthcare expenditure (KES) -0.131 ($p = 0.163$), social expenditure (SOS) -0.122 ($p = 0.088$), and education expenditure (PEND) 0.028 ($p = 0.776$) do not have a significant effect directly on the poverty rate in this model.

The effect of the Village Fund (DD) on the Human Development Index (HDI) shows a negative and significant coefficient of -0.476 ($p = 0.001$), meanwhile, economic function expenditure (EKO) and healthcare function expenditure (KES) are proven to have a positive and

significant effect on HDI with coefficients of 0.241 ($p = 0.002$) and 0.219 ($p = 0.024$), respectively. Conversely, the social function expenditure variable (SOS) 0.008 ($p = 0.911$) and education function expenditure variable (PEND) -0.103 ($p = 0.312$) do not show a significant effect on HDI.

Table 6. Indirect Effect and Total Effect

Variable	Indirect Effect	p-value	Total Effect	p-value
LN_PEND → KM	.048	.297	.076	.386
LN_KES → KM	-.102*	.049	-.233*	.010
LN_SOS → KM	-.004	.851	-.126	.113
LN_EKO → KM	-.112*	.010	-.103	.298
LN_DD → KM	.222*	.010	.219*	.049
IPM → KM	-	-	-.466*	.010
LN_PEND → IPM	-	-	-.103	.298
LN_KES → IPM	-	-	.219*	.049
LN_SOS → IPM	-	-	.008	.851
LN_EKO → IPM	-	-	.241*	.010
LN_DD → IPM	-	-	-.476*	.010

Source: Amos Output 23 Version

Notes: * Significant at $\alpha = 5\%$

The estimation results show that the education function expenditure variable (PEND) 0.048, ($p = 0.297$) and social function expenditure variable (SOS) -0.004 ($p = 0.851$) are identified as having no effect on the poverty rate through HDI because both p-value are above the 0.05 significance level. Overall, these results confirm that HDI is a crucial intervening variable in channeling the influence of fiscal policy, especially on healthcare and economic functions, toward poverty alleviation efforts in the research area. Meanwhile, healthcare function expenditure (KES) has a negative and significant indirect effect on the poverty rate through HDI by -0.102 (p -value = 0.049). Similarly, economic function expenditure (EKO) shows a negative and significant indirect effect on the poverty rate of -0.112 ($p = 0.010$). This indicates that budget allocations to the healthcare and economic sectors are effective in reducing the poverty rate if they are able to increase HDI achievements first. The Village Fund (DD) shows a positive and significant indirect effect on the poverty rate of 0.222 ($p = 0.010$).

The total effect in this study describes the accumulation of direct effects and indirect effects between variables in the model. Based on the total effect results, the total effect on the Poverty Rate (KM) variable, there are important findings regarding the effectiveness of fiscal policy. Healthcare function expenditure (KES) has a negative and significant total effect of -0.233 ($p = 0.010$), which means it is effective in reducing the poverty rate. In addition, HDI independently provides a negative and significant total effect of -0.466 ($p = 0.010$) on poverty. On the other hand, the Village Fund (DD) records the largest positive and significant total effect on poverty, which is 0.416 ($p = 0.010$). The economic function (EKO) ($p = 0.338$), social function (SOS) ($p = 0.113$), and education function (EDU) ($p = 0.386$) expenditure variables do not have a significant total effect on the poverty rate because their three p-values are above the 0.05 threshold. Meanwhile, for the Human Development Index (HDI) shows that the economic function expenditure variable (EKO) 0.241 ($p = 0.010$) and healthcare function expenditure variable (KES) 0.219 ($p = 0.049$) have a positive and significant effect. Conversely, the Village Fund (DD) has a negative and significant total effect on HDI of -0.476 ($p = 0.010$). Meanwhile, the education (PEND) ($p = 0.298$) and social SOS ($p = 0.851$) expenditure variables do not show a significant total effect on HDI.

This study aims to analyze the effect of expenditure variables for education (PEND), health (KES), social protection (SOS), the economy (EKO), and the Village Fund (DD) on the poverty rate

(KM) and the Human Development Index (HDI). The following section elaborates further on the direction and significance of the relationships between these specific variables.

A. The Impact of Local Government Expenditure in the Education Function on the Poverty Rate

Education spending does not show a direct impact on poverty, in line with the findings of Nofriza (2021) and Septriani et al. (2023). These findings indicate that budget allocations to the education sector in 29 regencies of Central Java Province have not yet been able to produce an immediate, tangible impact in reducing the percentage of the poor population. This is due to time lags, regional disparities, and the dominance of routine expenditures that are not yet aligned with labor market needs. As a result, targeted programs such as the free vocational high school program (*SMKN Jateng*) have only been able to provide micro-level impacts for beneficiary households but have not yet succeeded in reducing the province's aggregate poverty rate in the short term.

B. The Impact of Local Government Expenditure in the Healthcare Function on the Poverty Rate

Healthcare spending does not directly affect poverty levels, consistent with the findings of Bandiyono (2018) and Carolina (2022). The lack of a significant effect of health spending stems from the fact that this budget plays a greater role in improving the quality of human capital through the Human Development Index (HDI) than in directly reducing poverty. In Central Java, the *Jateng Gayeng Nginceng Wong Meteng* (5Ng—a maternal health initiative) and *Rumah Sakit Tanpa Dinding* (Hospital Without Walls) initiatives demonstrate that the impact of health spending on poverty tends to be indirect, occurring through improvements in the HDI.

C. The Impact of Local Government Expenditure in the Social Protection Function on the Poverty Rate

Social protection spending does not show a significant direct impact on poverty, consistent with the findings of Agussalim et al. (2024) and Melati et al. (2021). The lack of a significant impact of social protection spending stems from the fact that this budget functions more as a social safety net to maintain purchasing power than to enhance the productive capacity of the population. In Central Java, the *Kartu Jateng Sejahtera* (KJS—Central Java Welfare Card) program is one of the social protection initiatives; however, limitations in its coverage and targeting have meant that its impact on reducing poverty has not yet been significant.

D. The Impact of Local Government Expenditure in the Economy Function on the Poverty Rate

Economic expenditure has no direct effect on poverty, aligning with the studies of Potale et al. (2024), Saputra et al. (2025). This is because the benefits are only felt after the community's productive capacity has been enhanced through economic development and improvements in the Human Development Index (HDI). In Central Java, programs such as the development of the Batang–Kendal industrial zone and *Hetero Space* (a co-working and MSME hub) demonstrate that the impact of economic spending on poverty tends to be long-term rather than immediate.

E. The Impact of Village Fund on the Poverty Rate

The Village Fund records a positive and significant direct impact ($\beta = 0.194$). This indicates that an increase in the Village Fund tends to be followed by a higher poverty rate, consistent with the findings of Deviyanti et al. (2025), and Setiawan et al. (2024). The positive relationship between the Village Fund and poverty can be explained by reverse causality, namely that larger allocations of the Village Fund are directed toward regions with high poverty rates. In Central Java, the (*Satu OPD Satu Desa Dampungan*—One OPD, One Assisted Village) program has supported the management of the Village Fund; however, its utilization remains dominated by physical infrastructure projects, so its impact on poverty reduction has not yet been optimal.

F. The Impact of HDI on the Poverty Rate

HDI acts as the strongest instrument in reducing poverty, showing a powerful negative and significant effect ($\beta = -0.466$), which means that every one standard deviation increase in HDI will decrease poverty by 0.466 standard deviation. Investing in human capital through education and health increases individual competitive advantage in the economy consistent with Gary Becker's Human Capital Theory, Apriyanti & Rospida (2025) and Mauludi & Rahmawati (2023). Upgrading human capital quality through solid health and education creates a competitive workforce. This structural improvement increases household productivity and labor market participation, effectively enabling individuals to break the poverty cycle.

G. The Impact of Local Government Expenditure in the Education Function on the HDI

Regional education spending has no significant effect on HDI, aligning with Miranda-Iescano & Roca-sagalés, 2023, Rahmah et al. (2023). The insignificance of this effect implies that the indirect and total effects of education spending on the poverty rate through the HDI are also insignificant. This is likely due to the time lag in the benefits of education spending, as well as the continuing disparities in HLS (Expected Years of Schooling) and RLS (Mean Years of Schooling) across regions in Central Java, meaning that programs such as *SMKN Jateng* and *SMKN Semi Boarding* have not yet been able to significantly increase the HDI or reduce poverty through targeted programs that directly improve schooling indicators.

H. The Impact of Local Government Expenditure in the Healthcare Function on the HDI

Healthcare spending exerts a positive and significant impact on HDI ($\beta = 0.219$) indicating that every one standard deviation increase in health spending will raise the HDI by 0.219 standard deviations. This strongly supports Gary Becker's Human Capital Theory and is consistent with the findings of Hadiyanto et al. (2022), Harsono et al. (2024), Miranda-Iescano & Roca-sagalés (2023). Health function spending has a significant, indirect, and negative effect on the poverty rate through the HDI ($\beta = -0.102$), with a total effect of -0.233, indicating that the HDI mediates this relationship. This occurs because increased health budgets through programs such as *Jateng Gayeng Nginceng Wong Meteng* (5Ng) and *Rumah Sakit Tanpa Dinding* improve public health, thereby boosting productivity and reducing poverty rates.

I. The Impact of Local Government Expenditure in the Social Protection Function on the HDI

Social protection spending does not significantly influence HDI, a finding that mirrors Amelia & Arisetyawan (2024), Siregar et al. (2023). The lack of significance of this effect indicates that the Human Development Index (HDI) does not serve as a mediating variable in the relationship between social protection spending and poverty rates. This is likely due to the fact that social protection spending such as *Kartu Jateng Sejahtera (KJS)* program, is more focused on short-term protection, while limitations in program targeting and implementation mean that its impact on the HDI and poverty reduction has not yet been significant.

J. The Impact of Local Government Expenditure in the Economy Function on the HDI

Economic expenditure demonstrates a positive and significant direct effect on HDI 0.241 indicating that every one standard deviation increase in economic spending will raise the HDI by 0.241 standard deviations. Validating Gary S. Becker's Human Capital Theory and matching Bandiyono (2018), Linhartová (2020). Economic function spending has a significant indirect negative effect on the poverty rate through the HDI with a coefficient of -0.112, however, its total effect is not significant, indicating that its effectiveness depends on improvements in the quality of human development. This is supported by the *Jalan Alus* (Smooth Roads initiative) and *Hetero Space* programs in Central Java, which improve

connectivity and empower MSMEs, thereby driving an increase in the HDI that ultimately contributes to poverty reduction.

K. The Impact of Village Fund on the HDI

The Village Fund captures a negative and significant relationship with HDI 0.476, indicating that a one standard deviation increase in Village Funds will reduce the HDI by 0.476 standard deviations. This is consistent with the findings of Saragi et al. (2021) who state that Village Funds concentrated heavily on physical infrastructure are less effective in reaching deeper dimensions of quality of life. It is also supported by Badrudin et al. (2021) who highlight that limited human resource capacity among village budget managers keeps the fund utilization from giving a real impact on human quality. The Village Fund also has a positive and significant indirect effect on the poverty rate through the Human Development Index (HDI), with a coefficient of 0.222 and a total positive effect of 0.416, indicating that the HDI has not been able to effectively mediate this relationship. This situation is likely due to the fact that the use of Village Funds is still dominated by physical infrastructure development, while programs such as *Rumah Tidak Layak Huni* (RTLH—Uninhabitable Houses rehabilitation) have not been optimally integrated with community economic empowerment, so their impact on the HDI and poverty reduction remains limited.

CONCLUSION

Based on the analysis, HDI is the most powerful tool for directly reducing poverty while healthcare and economic expenditures are effective only when successfully mediated through HDI. Conversely, education and social budgets are insignificant, whereas the Village Fund shows a positive relationship with poverty, likely due to reverse causality and capital-intensive project bias. Mechanistically, the government should strengthen the effectiveness of health spending, productive economic programs, MSME empowerment, and the monitoring, regency governments must technically shift budgets from routine administrative costs toward primary healthcare upgrades to boost life expectancy and mandate a 30% minimum of the Village Fund for labor-intensive productive economic empowerment. However, this study is limited by the use of 2024 budget data instead of actual realization and relatively low R-squared values. Therefore, future research should utilize full expenditure realization data and extend the observation period to capture more accurate trend, and apply and apply more comprehensive econometric approaches.

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