

The Effect of Local Own-Source Revenue, Economic Growth, and General Allocation Fund on the Human Development Index in Magetan Regency

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ABSTRACT

This study examines the effects of Local Own-Source Revenue (PAD), Economic Growth, and the General Allocation Fund (DAU) on the Human Development Index (HDI) in Magetan Regency during 2013-2024. A quantitative approach using 12 annual time-series observations was employed and estimated through multiple linear regression with Ordinary Least Squares (OLS). The results show that PAD has a positive and significant effect on HDI, while Economic Growth and DAU do not have significant partial effects. Simultaneously, the three variables significantly explain HDI variation, with an adjusted R-squared of 0.7460. These findings indicate that locally generated fiscal capacity is more closely associated with human development than annual economic fluctuations or aggregate general transfers during the observation period.

INTRODUCTION

Human development is a central objective of regional development because development outcomes are ultimately reflected in people's ability to live healthy lives, acquire knowledge, and maintain a decent standard of living. Economic growth and public revenue are important instruments, but they are not ends in themselves. The capability approach emphasizes that resources have developmental value only when they expand real opportunities for individuals to achieve valuable functionings, including health, education, productive work, and social participation (Sen, 1992; Sen, 1999). This perspective is consistent with the human development paradigm introduced by the United Nations Development Programme, which places people at the center of development rather than treating income growth as the sole measure of success (United Nations Development Programme, 1990).

The Human Development Index (HDI) provides a composite measure of development achievements in health, education, and a decent standard of living. Magetan Regency presents an important local case because its HDI improved consistently throughout the observation period. The HDI increased from 69.86 in 2013 to 76.77 in 2024, and the 2024 level was above the provincial average of East Java. The pattern indicates that the main issue is not a decline in human development, but rather how the regency sustained improvement while its fiscal and economic conditions changed from year to year (Badan Pusat Statistik Provinsi Jawa Timur, 2025).

The fiscal capacity available to a local government can shape its ability to provide public services. Local Own-Source Revenue, commonly referred to in Indonesia as *Pendapatan Asli Daerah* (PAD), reflects revenue generated from local taxation, charges, separated regional assets, and other legitimate local sources. In Magetan Regency, PAD increased from IDR 87.86 billion in 2013 to IDR 283.75 billion in 2024, although the series experienced several declines. In the context of fiscal decentralization, stronger locally generated revenue may provide greater flexibility for financing education, health, basic infrastructure, and other services that are closely connected with human development outcomes (Oates, 1999; Republik Indonesia, 2022).

Economic growth provides another potential channel for improving human development. A growing regional economy may create employment, raise household income and purchasing power, and broaden the tax base. However, the growth path of Magetan Regency was more volatile than its HDI trajectory. Economic growth remained around five percent in much of the pre-pandemic period, contracted to -1.64 percent in 2020, and gradually recovered to 4.79 percent in 2024. The contrast between a volatile annual growth rate and a continuously improving HDI suggests that the relationship may not be contemporaneous or automatic. Growth can fail to translate into human development when its benefits are concentrated, when employment effects are weak, or when improvements in education and health require a longer accumulation period (Todaro & Smith, 2020).

Magetan Regency also receives the General Allocation Fund, or *Dana Alokasi Umum* (DAU), from the central government. DAU is designed to reduce

differences in fiscal capacity and public-service provision across regions. During 2013-2024, Magetan's DAU increased from IDR 761.64 billion to IDR 967.18 billion, but it also declined during several years, particularly in 2020-2022. Although DAU strengthens a local government's budgetary resources, the amount received does not by itself show how effectively the transfer is converted into education, health, infrastructure, or other services that affect HDI (Republik Indonesia, 2022).

Previous empirical findings remain inconclusive. Suhyanto, Juanda, Fauzi, and Rustiadi (2020) found positive effects of PAD and DAU on HDI, whereas Sembiring (2020) found that PAD was significant while DAU was not. Sulastris and Efendri (2021) reported a positive effect of PAD but a negative effect of DAU. For economic growth, Hestningsih, Mafruhah, and Seftarita (2023) found a positive and significant relationship with HDI, while Anitasari and Imaningsih (2024) found no significant direct effect. More recently, Arrosyid and Bawono (2025) again reported a positive role for PAD but no significant effect of DAU. The variation across findings implies that local economic structure, fiscal dependence, spending quality, and regional characteristics may influence how fiscal and economic resources are translated into human development.

This study contributes to the existing discussion by focusing on Magetan Regency using the 2013-2024 period and a parsimonious model consisting of PAD, Economic Growth, and DAU. The period captures normal pre-pandemic conditions, the 2020 contraction, and the subsequent recovery, while the dependent variable continues to show a gradual upward trend. The study therefore examines whether locally generated revenue, annual economic growth, and general transfers explain the observed variation in HDI. Specifically, the research aims to assess the partial effects of PAD, Economic Growth, and DAU on HDI and to evaluate their simultaneous explanatory effect within Magetan Regency.

THEORETICAL REVIEW

Human Development Theory and the Capability Approach

The human development perspective regards people as both the beneficiaries and agents of development. Sen's capability approach distinguishes between resources and the substantive freedoms that people have to achieve valuable states of being and doing. Equal amounts of income or public resources do not necessarily produce equal welfare because individuals and communities differ in access, geography, public services, and the ability to convert resources into capabilities (Sen, 1992; Sen, 1999).

HDI is consistent with this perspective because it combines achievements in health, knowledge, and a decent standard of living. It does not capture every dimension of welfare, but it provides a standardized indicator that is available across years and local jurisdictions. In this study, HDI is treated as the outcome of human development, while PAD, Economic Growth, and DAU are treated as fiscal and economic resources that may expand the capabilities of the population when they are effectively transmitted through household income and public

services (Badan Pusat Statistik, 2025; United Nations Development Programme, 1990).

Fiscal Decentralization Theory

Fiscal decentralization explains the allocation of revenue and expenditure responsibilities across levels of government. Fiscal federalism argues that local governments may provide locally consumed public services more efficiently because they are closer to residents and have better information about local needs. This informational advantage can improve the allocation of resources to education, health, sanitation, roads, and other public services when local institutions are capable and accountable (Oates, 1999).

PAD and DAU represent two different components of regional fiscal capacity. PAD originates from local sources and therefore reflects the government's own-source revenue base, while DAU is an intergovernmental transfer intended to address disparities in fiscal capacity and service needs. Both may support human development, but the effect depends on allocation quality, institutional capacity, and the extent to which additional resources reach programs that influence health, education, and living standards (Republik Indonesia, 2022).

Economic Growth and Development Theory

Economic growth refers to an increase in real output over time, whereas economic development has a broader meaning that includes structural transformation, employment, poverty reduction, distribution, and improvements in quality of life. Consequently, a region can record higher output without achieving a comparable improvement in human development when the benefits of growth are not broadly shared (Todaro & Smith, 2020).

Economic growth can affect HDI through several channels. Higher production can increase employment and household purchasing power, enabling families to finance food, education, health care, and other necessities. It can also increase the local tax base and strengthen the government's ability to provide public services. Nevertheless, health and education indicators are cumulative and may respond slowly to short-run economic fluctuations. This timing difference is important for interpreting annual time-series results.

Local Own-Source Revenue and Human Development

PAD provides local governments with fiscal resources that can be directed toward locally identified priorities. When a greater own-source revenue base is accompanied by effective budgeting, it can support schools, health facilities, water and sanitation, roads, and local economic programs. Suhyanto et al. (2020), Sembiring (2020), and Arrosyid and Bawono (2025) provide empirical evidence that supports a positive relationship between PAD and HDI, although other studies indicate that the strength of the relationship can vary across regions.

Based on fiscal decentralization theory and the empirical evidence above, the first hypothesis is formulated as follows.

H1: Local Own-Source Revenue has an effect on the Human Development Index in Magetan Regency.

Economic Growth and Human Development

Economic growth is expected to improve HDI when higher output generates productive employment, increases household income, and broadens the resources available for public services. However, the relationship may be weak when growth is concentrated or when gains in health and education occur with a lag. Hestningsih et al. (2023) found a positive and significant effect of economic growth on HDI, whereas Anitasari and Imaningsih (2024) reported an insignificant direct effect.

The contrasting findings indicate that the relationship must be tested in the specific context of Magetan Regency.

H2: Economic Growth has an effect on the Human Development Index in Magetan Regency.

General Allocation Fund and Human Development

DAU is an equalization transfer designed to help regions meet expenditure needs even when own-source revenue is limited. The transfer can support education, health, public works, administrative services, and other functions financed through the regional budget. Nevertheless, the total value of DAU does not identify the composition or quality of the expenditure financed by the transfer, and its effect on HDI may therefore differ across regions.

Empirical evidence is mixed. Suhyanto et al. (2020) reported a positive relationship, Sembiring (2020) and Arrosyid and Bawono (2025) found no significant effect, and Sulastri and Efendri (2021) found a negative effect. These differences support a context-specific test for Magetan Regency.

H3: The General Allocation Fund has an effect on the Human Development Index in Magetan Regency.

Simultaneous Relationship

Human development is influenced by interacting fiscal and economic conditions rather than by a single variable in isolation. PAD represents local fiscal capacity, Economic Growth reflects the dynamics of regional economic activity, and DAU provides transfer-based fiscal support. A simultaneous test is therefore needed to evaluate whether the model as a whole explains variation in HDI even if one or more partial coefficients are not statistically significant.

H4: Local Own-Source Revenue, Economic Growth, and the General Allocation Fund simultaneously affect the Human Development Index in Magetan Regency.

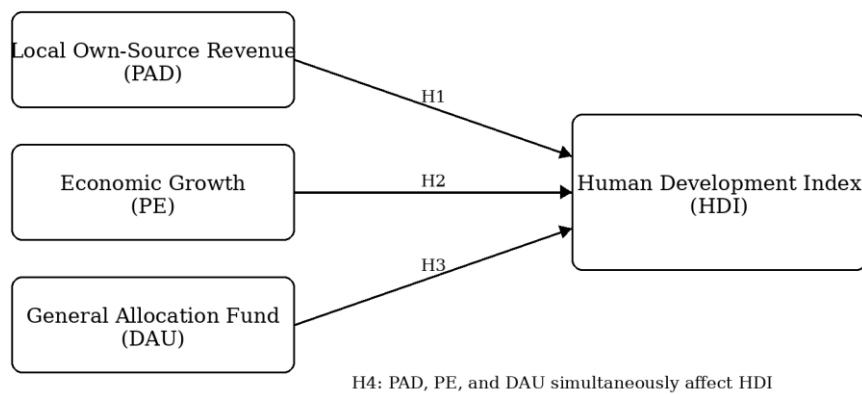


Figure 1. Conceptual Framework

METHODOLOGY

This study uses a quantitative explanatory approach and focuses on Magetan Regency, East Java. The analysis uses annual secondary time-series data from 2013 to 2024, yielding 12 observations. The selected period was determined by the revised scope of the journal article and includes the pre-pandemic period, the 2020 economic contraction, and the subsequent recovery. The data were compiled from official statistics and government sources used in the original undergraduate research, particularly publications of Statistics Indonesia (BPS), BPS East Java Province, and BPS Magetan Regency.

The dependent variable is the Human Development Index (HDI), measured in index points. The independent variables are Local Own-Source Revenue (PAD), measured from the realized PAD of Magetan Regency; Economic Growth (EG), measured by the annual growth rate of gross regional domestic product at constant 2010 prices; and the General Allocation Fund (DAU), measured from the realized DAU received by Magetan Regency. Consistent with the original research specification, the monetary variables PAD and DAU are expressed in natural logarithms at the estimation stage to reduce scale differences, while Economic Growth remains in percentage terms.

The empirical model is estimated using multiple linear regression with the Ordinary Least Squares (OLS) method in EViews. The model is specified as follows:

$$\text{HDI}_t = \alpha + \beta_1 \text{LnPAD}_t + \beta_2 \text{EG}_t + \beta_3 \text{LnDAU}_t + \varepsilon_t \quad (1)$$

where HDI_t is the Human Development Index in year t ; LnPAD_t is the natural logarithm of Local Own-Source Revenue; EG_t is the annual economic growth rate; LnDAU_t is the natural logarithm of the General Allocation Fund; α is the intercept; β_1 , β_2 , and β_3 are regression coefficients; and ε_t is the error term.

Before hypothesis testing, the residual and explanatory variables are evaluated using the classical assumption tests applied in the revised regression output. Residual normality is assessed using the Jarque-Bera test, multicollinearity using centered Variance Inflation Factors (VIF), serial correlation using the Breusch-Godfrey Serial Correlation LM test, and

heteroskedasticity using the White test. Partial effects are evaluated with t-tests at the 5 percent significance level, the overall model with the F-test, and explanatory power with R-squared and adjusted R-squared.

The small number of observations is an important methodological limitation. With 12 annual observations and three explanatory variables plus an intercept, the model has eight residual degrees of freedom. The estimates can therefore be calculated and used for a focused regional analysis, but statistical power is limited and the results should not be generalized beyond the observed period without caution.

RESULTS

Table 1 summarizes the distribution of the four variables during 2013-2024. HDI has a mean of 73.13 and a relatively small standard deviation, reflecting its gradual upward movement. PAD and DAU have substantially larger numerical variation because they are fiscal variables expressed in billions of rupiah in the descriptive table. Economic Growth shows the strongest short-run fluctuation relative to its scale because the series includes the 2020 contraction and the subsequent recovery.

Table 1. Descriptive Statistics, 2013-2024

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
HDI	73.1317	73.2000	69.8600	76.7700	2.0612
PAD	196.3542	200.2450	87.8600	283.7500	54.6017
EG	4.2617	5.0650	-1.6400	5.8500	1.9950
DAU	872.8700	867.2150	761.6400	967.1800	55.0116

Note: PAD and DAU are shown in billions of rupiah in the descriptive table; logarithmic transformations are used at the estimation stage.

The classical assumption results are presented in Table 2. The Jarque-Bera probability exceeds the 5 percent level, indicating that the residuals do not depart significantly from normality. The centered VIF values for PAD, Economic Growth, and DAU are all well below the threshold of 10, so the model does not indicate severe multicollinearity among the explanatory variables.

Table 2. Classical Assumption Test Results

Test	Statistic	Probability/VIF	Interpretation
Jarque-Bera normality	JB = 0.937231	0.625868	Residuals are normally distributed
Multicollinearity - PAD	Centered VIF	2.289551	No severe multicollinearity
Multicollinearity - EG	Centered VIF	1.332298	No severe multicollinearity
Multicollinearity - DAU	Centered VIF	2.075246	No severe multicollinearity

Breusch-Godfrey LM	Obs*R ² 0.919643	=	0.6314	No serial correlation (LM criterion)
White heteroskedasticity	Obs*R ² 11.64861	=	0.1676	No heteroskedasticity (LM criterion)

The Breusch-Godfrey LM test also does not reject the null hypothesis of no serial correlation up to two lags when the Obs*R-squared criterion is used. For heteroskedasticity, the White test produces an Obs*R-squared probability above 0.05, supporting the homoskedasticity conclusion under the LM form of the test. However, the F-form probability of the White test is below 0.05. Because the sample is very small, this difference is reported transparently and the regression inference is interpreted cautiously rather than treating the diagnostic result as unequivocal.

*Additional White-test output: Prob. F(8,3) = 0.0312 and Prob. Scaled Explained SS = 0.9850. The article follows the Obs*R-squared decision rule used in the research method, while reporting the differing F-form result as a small-sample caution.*

The regression estimates are reported in Table 3. PAD has a positive coefficient and is statistically significant at the 5 percent level. Economic Growth has a negative coefficient but is statistically insignificant, and DAU also has a negative coefficient with a probability far above the 5 percent threshold. Thus, among the three explanatory variables, only PAD has a statistically significant partial relationship with HDI over the observation period.

Table 3. Multiple Linear Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	44.79702	40.99010	1.092874	0.3063
PAD	13.13859	3.382786	3.883955	0.0046
EG	-0.042832	0.181215	-0.236360	0.8191
DAU	-0.467305	15.80320	-0.029570	0.9771

For transparency and to preserve the original estimation evidence, the EViews output for the 2013-2024 multiple linear regression model is presented in Figure 2.

Dependent Variable: IPM
Method: Least Squares
Date: 08/23/26 Time: 11:40
Sample: 2013 2024
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	44.79702	40.99010	1.092874	0.3063
PAD	13.13859	3.382786	3.883955	0.0046
PE	-0.042832	0.181215	-0.236360	0.8191
DAU	-0.467305	15.80320	-0.029570	0.9771
R-squared	0.815274	Mean dependent var	73.13167	
Adjusted R-squared	0.746002	S.D. dependent var	2.061155	
S.E. of regression	1.038785	Akaike info criterion	3.175182	
Sum squared resid	8.632593	Schwarz criterion	3.336818	
Log likelihood	-15.05109	Hannan-Quinn criter.	3.115339	
F-statistic	11.76916	Durbin-Watson stat	1.236424	
Prob(F-statistic)	0.002645			

Figure 2. EViews Multiple Linear Regression Output, 2013-2024

Source: Research data processed using EViews, 2026.

Model summary: R-squared = 0.815274; Adjusted R-squared = 0.746002; F-statistic = 11.76916; Prob(F-statistic) = 0.002645; Durbin-Watson = 1.236424; n = 12.

The model has an R-squared of 0.8153 and an adjusted R-squared of 0.7460. The F-statistic is 11.7692 with a probability of 0.002645, which indicates that PAD, Economic Growth, and DAU jointly have a statistically significant relationship with HDI. The adjusted measure indicates that the model explains approximately three-quarters of the observed HDI variation after accounting for the number of predictors. The Durbin-Watson statistic is 1.2364, but serial-correlation inference is based primarily on the Breusch-Godfrey test because it is more appropriate for the time-series diagnostic used in this study.

Table 4 summarizes the hypothesis decisions. The first hypothesis is supported because PAD shows a significant partial effect. The second and third hypotheses are not supported because Economic Growth and DAU are not statistically significant in the partial tests. The fourth hypothesis is supported because the three explanatory variables are jointly significant in the F-test.

Table 4. Hypothesis Testing Summary

Hypothesis	Relationship	Statistical Result	Decision
H1	PAD → HDI	Positive and significant	Supported
H2	EG → HDI	Not significant	Not supported
H3	DAU → HDI	Not significant	Not supported
H4	PAD, EG, DAU → HDI	Jointly significant	Supported

DISCUSSION

Effect of Local Own-Source Revenue on Human Development

The positive and significant relationship between PAD and HDI indicates that stronger locally generated fiscal capacity is associated with better human development outcomes in Magetan Regency. This finding is economically plausible because own-source revenue gives the local government greater room to finance programs based on local priorities. Unlike a purely macroeconomic indicator, PAD enters directly into the regional fiscal system and can be converted into public expenditure for health, education, sanitation, infrastructure, and local economic support.

The pattern is consistent with the fiscal decentralization perspective. A local government that has greater fiscal resources under its own authority may respond more closely to local service needs, provided that planning and implementation are effective. In the capability framework, the relevance of PAD is not the revenue itself but the services and opportunities that the revenue can help create. Public spending that improves access to schools, health services, clean water, mobility, or household economic opportunities can broaden people's capabilities and eventually be reflected in HDI.

The result is also consistent with Suhyanto et al. (2020), Sembiring (2020), and Arrosyid and Bawono (2025), which found that PAD is positively associated with human development. The finding does not imply that every increase in local revenue automatically raises HDI. The transmission still depends on expenditure composition, efficiency, governance, and the extent to which additional revenue reaches sectors that are close to the HDI dimensions. Nevertheless, within the Magetan sample, PAD is the fiscal variable that shows the clearest partial relationship with HDI.

Magetan's fiscal pattern helps explain why this relationship may be visible. Over the observation period, PAD increased substantially even though it fluctuated in several years. The increase expanded the pool of locally controlled revenue while HDI continued to improve. This does not prove a one-to-one causal mechanism, but it is consistent with the idea that stronger local revenue capacity can support continuity in service delivery and development programs over time.

Effect of Economic Growth on Human Development

Economic Growth does not show a significant partial effect on HDI. This result should not be interpreted as evidence that economic activity is irrelevant to human welfare. Rather, it indicates that annual changes in regional output do not provide a sufficiently stable direct explanation for annual HDI changes once PAD and DAU are considered in the model.

One reason is the difference in adjustment speed between the variables. Economic growth can change sharply within a single year, as occurred during the pandemic shock and the subsequent recovery. In contrast, two of the three HDI dimensions - health and education - are strongly cumulative. Life expectancy, mean years of schooling, and expected years of schooling are shaped by long-term service quality, household behavior, and previous investments. Therefore, a short-run increase or decrease in output may not be immediately reflected in the composite HDI.

The structure of the Magetan economy also provides a relevant context. Agriculture, trade, and processing activities account for important shares of regional output. Growth in these sectors can increase production without automatically producing proportional gains in household income, formal employment, or access to public services for all residents. The welfare effect depends on labor absorption, productivity, distribution, and whether higher activity translates into sustained household purchasing power.

This interpretation is consistent with the distinction between growth and development emphasized by Todaro and Smith (2020). The result is in line with Anitasari and Imaningsih (2024), who found no significant direct effect of Economic Growth on HDI, but it differs from Hestiningsih et al. (2023), who found a positive effect. The difference reinforces the argument that the growth-human development relationship is highly dependent on regional structure and the period observed.

Effect of the General Allocation Fund on Human Development

DAU does not have a significant partial relationship with HDI in the Magetan Regency model. The result is reasonable when the institutional function of DAU is considered. DAU is an equalization transfer and its amount reflects fiscal needs and fiscal capacity, not simply a reward for better development outcomes. A region may receive a larger transfer because it faces higher financing needs, while a region with improving fiscal capacity may not experience proportional growth in DAU.

Another important issue is the composition of spending. The study uses total DAU rather than separating the portion that ultimately finances education, health, infrastructure, personnel, or administrative functions. Consequently, the aggregate transfer may be too broad to capture the specific pathway through which government spending affects the HDI dimensions. If a large portion of additional transfer resources is used for expenditures with indirect or delayed human-development effects, the contemporaneous coefficient can be statistically weak.

The time dimension also matters. Improvements in school quality, health systems, public works, and institutional capacity often require several years before their effects appear in human-development indicators. A same-year regression does not model these lagged transmission mechanisms. Therefore, the insignificant coefficient should be interpreted as a lack of evidence for a direct contemporaneous effect, not as proof that DAU has no role in financing human development.

This finding is consistent with Sembiring (2020) and Arrosyid and Bawono (2025), which also found no significant DAU effect, while it differs from Suhyanto et al. (2020) and Sulastri and Efendri (2021). The diversity of previous results is consistent with the equalization function of transfers and with differences in local expenditure structures. For Magetan, the result highlights the importance of evaluating not only how much transfer funding is received but also how effectively it is targeted and converted into service outcomes.

Simultaneous Effect of PAD, Economic Growth, and DAU on Human Development

Although Economic Growth and DAU are not significant individually, the three explanatory variables are significant when tested jointly. This does not create a contradiction. The F-test evaluates whether the set of regressors collectively contributes to explaining HDI variation, while each t-test evaluates a specific coefficient after controlling for the other variables. A model may therefore be significant overall even when only one predictor is individually significant.

Substantively, the result supports the view that human development is shaped by a combination of local fiscal resources, broader economic conditions, and intergovernmental support. PAD provides locally controlled financing, Economic Growth reflects the income and production environment, and DAU supports fiscal equalization. Their joint movement describes a broader regional development environment than any single variable alone.

At the same time, the relatively small sample requires caution. A high explanatory share in a short time series can coexist with coefficient instability and limited statistical power. The results are therefore best read as evidence for the observed 2013-2024 Magetan context rather than as a universal causal law. The model is useful for identifying the comparatively stronger role of PAD within the sample and for showing that aggregate fiscal-economic conditions jointly matter, but it does not eliminate the possibility that omitted variables such as poverty, unemployment, sectoral public spending, or service quality also influence HDI.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that Local Own-Source Revenue has a positive and significant relationship with the Human Development Index in Magetan Regency during 2013-2024. The finding suggests that stronger local fiscal capacity is associated with improved human development and supports the argument that locally controlled revenue can contribute to the financing of services linked to health, education, and living standards.

Economic Growth does not have a significant partial effect on HDI during the observation period. The result indicates that short-run changes in regional output are not automatically translated into contemporaneous changes in human development. The cumulative nature of health and education outcomes, the distribution of growth benefits, and the sectoral structure of the economy provide plausible explanations for the weak direct relationship.

The General Allocation Fund also does not show a significant partial effect. Because DAU is an equalization transfer and the study uses the aggregate value of the transfer, the result is more appropriately interpreted as an absence of evidence for a direct same-year effect than as evidence that DAU is unimportant. The effectiveness of the transfer depends on expenditure composition, targeting, implementation quality, and the time needed for public programs to affect human-development indicators.

Simultaneously, PAD, Economic Growth, and DAU significantly explain HDI variation. The practical implication is that Magetan Regency should continue strengthening the quality and sustainability of PAD while ensuring that both own-source revenue and transfer resources are directed toward measurable

improvements in basic services. Economic policy should also emphasize inclusive growth, productive employment, and household purchasing power so that higher economic activity can be more effectively translated into human-development gains.

FURTHER STUDY

The study is limited by the number of observations. The 2013-2024 period provides only 12 annual observations, so the statistical power of a three-predictor time-series model is limited. The analysis also focuses on contemporaneous relationships and does not explicitly test lagged effects, while education, health, and public investment often influence HDI with substantial delays. Future studies should consider longer time series where consistent data are available, panel data across districts or regencies, and explicit time-series diagnostics such as stationarity and cointegration tests. More disaggregated fiscal variables, particularly education expenditure, health expenditure, and the designated versus undesignated portions of DAU, may provide a clearer view of the transmission from public finance to human development. Poverty, unemployment, and sectoral economic structure may also be included to reduce omitted-variable limitations.

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