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Does Local Government Expenditure Lead to Human Development in Indonesia?

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Abstract

Human development has become a national development priority in the vision of Indonesia Emas 2045, but the HDI score shows district-level inequality in increasing local government expenditure. This study aims to identify the effect of local government expenditure realization on HDI. The data used is 508 districts of Indonesia in 2017-2022, and it was analyzed using a panel data regression fixed-effect model. The novelty of this study lies in the local government at the district level and local government expenditure according to function and type classification. The study shows that education expenditure, health expenditure, economic expenditure, employee expenditure, and goods and services expenditure have a significant positive effect on HDI, but capital expenditure has a significant negative effect on HDI. Local governments are expected to understand the dominant role of health expenditure in increasing HDI, increase the budget allocation for economic and capital expenditure, reduce the budget allocation for employee and goods and services, and measure the performance of local government expenditure.

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INTRODUCTION

Economic development is not only determined by economic growth but also by the quality of human development. Three main factors can measure the quality of economic development in a country: first, the increase in the availability and distribution of necessities such as food, housing, health, and protection; second, the improvement in the quality of life, including higher income, job availability, quality of education, and attention to human values that enhance self-confidence; and third, the expansion of economic and social choices for each individual (Todaro & Smith, 2020; Arsyad, 2022).

Human development has long been a priority in Indonesia, as it is enshrined as a national goal in the 1945 Constitution. According to the preamble and several articles within the Constitution, human development is closely tied to fundamental human needs, including education, health, and a decent standard of living.

To accelerate the quality of human development in Indonesia, the central government has introduced the vision of *Indonesia Emas 2045: Negara Nusantara Berdaulat, Maju, dan Berkelanjutan* (A Sovereign, Advanced, and Sustainable Archipelagic State). This vision, which outlines development pillars, agendas, key development goals, and directions, identifies human development as the top priority for national progress, as specified in the National Long-Term Development Plan (RPJPN) 2025-2045 (Bappenas, 2024).

Local governments play a crucial role in supporting human development at the district level due to their authority to determine regional policies, as outlined in Law No. 23/2014 on Regional Government. Given the diversity of districts and their specific needs, local governments are the institutions most closely positioned to understand and address the challenges of human development at the district level.

The realization of local government expenditure on human development programs and activities increased from 2017 to 2022. As shown in Figure 1, spending on education, health, and economic development rose by an average of 7.53 trillion IDR, 11.69 trillion IDR, and 15.87 trillion IDR, respectively. Economic expenditure saw a significant increase in 2021-2022, largely due to its use in public welfare recovery efforts following the COVID-19 pandemic.

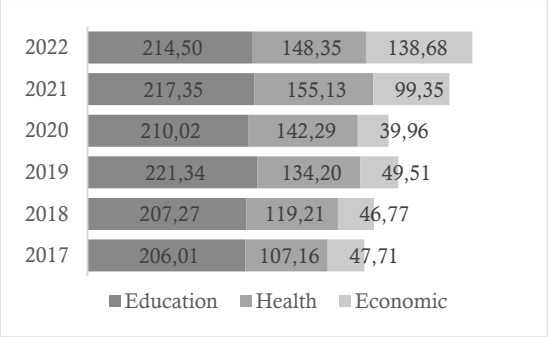

Figure 1. Realization of Local Government Expenditure by Function (Trillion IDR)
Source: DJPK, 2024 (Processed)

Based on Figure 2, the realization of employee expenditure and goods and services expenditure increased by an average of 2,93 trillion and 15,88 trillion IDR, respectively, while capital expenditure decreased by an average of 3,84 trillion IDR.

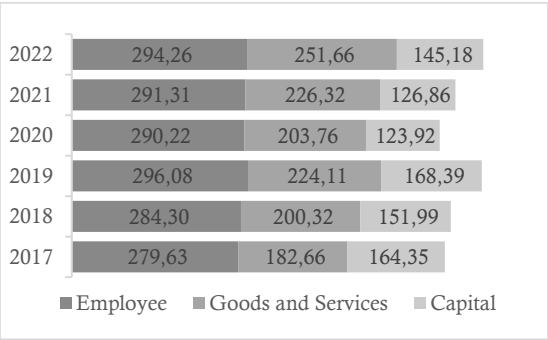

Figure 2. Realization of Local Government Expenditure by Type (Trillion IDR)
Source: DJPK, 2024 (Processed)

The quality of human development in Indonesia is measured by Human Development Index (HDI). Based on Figure 3, the increase in the HDI score during the 2017-2022 period

indicates an improvement in the quality of human development in Indonesia. However, this increase was accompanied by disparities human development at the district level, as evidenced by the significant difference between the highest and lowest HDI scores.

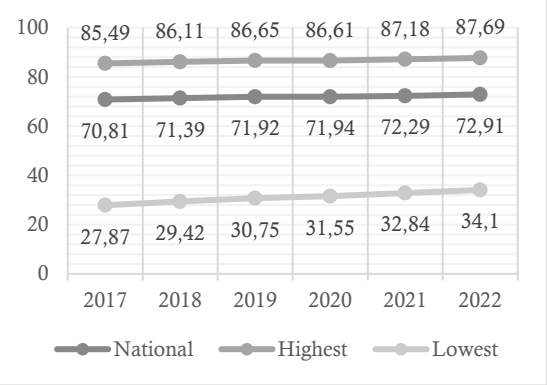

Figure 3. HDI Score in Indonesia
Source: BPS-Statistics Indonesia, 2024

Based on Figure 4, the distribution of HDI categories reveals human development inequality from 2017 to 2022. The quality of human development at the district level has improved, as evidenced by an increase in the number of districts in the high and very high HDI categories and a decrease in the number of districts in the low and medium categories. However, it is important to note that there are still 20 regions (3.89%) with low HDI and 221 regions (42.99%) with medium HDI that require attention, as their quality of human development remains significantly behind others.

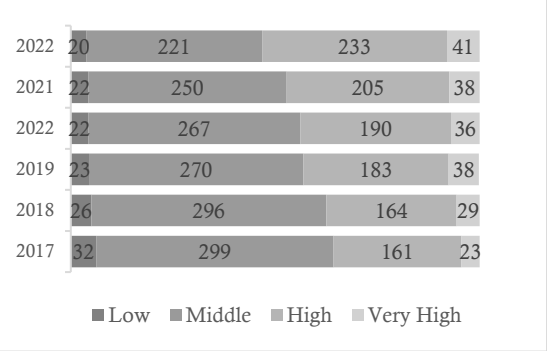

Figure 4. Number of Districts by HDI Categories
Source: BPS-Statistics Indonesia, 2024

The effect of government expenditure on the economy has been a subject of debate between classical and Keynesian economists. Initially, classical economists argued that output equilibrium is always at full employment, meaning actual output equals potential output. They also emphasized that the economy could adjust to various situations through market mechanisms. Consequently, classical economists believed that government intervention in the economy was unnecessary and potentially harmful (Froyen, 2013).

In contrast, Keynesian economists developed ideas that opposed the classical view. John Maynard Keynes emphasized the importance of short-run adjustment efforts over long-run recovery through market mechanisms, especially during the Great Depression of the 1930s (Blanchard, 2021). Keynes stated that the equilibrium level of production requires output to be equal to aggregate demand. He also argued that prices and wages are rigid in the short run. Therefore, fiscal expansion policies, such as increased government spending, are necessary to stimulate aggregate demand, create more jobs, and reduce unemployment (Mankiw, 2019).

Richard Musgrave stated that the government has a role in the economy through fiscal policies, which include stabilization, allocation, and distribution functions (Stiglitz & Rosengard, 2015). The allocation function is implemented through government expenditure policy, where the government provides public goods that are non-excludable and non-rivalrous due to market failure (Harmadi, 2020).

Local government expenditure from regional budget allocations (APBD) is used to improve human development quality at the district level (Juanda et al., 2013), based on the principles of better spending: efficiency, effectiveness, and prioritization (DJA, 2023). Public goods provided through government activities are considered outputs, while the impacts of government programs are seen as outcomes. Education, health, and economic expenditures aim to enhance education, health, and living standards. Employee expenditures are allocated for civil servants' salaries, goods and services expenditures are used for items with a useful life of less than 12 months, and capital

expenditures are allocated for fixed assets with a useful life of more than 12 months.

Gary S. Becker states that education expenditure is an investment in improving the quality of human resources for the future. Workers with specialized skills are less vulnerable to layoffs and earn higher wages compared to unskilled workers (Becker, 1962). Mahbub ul-Haq and Amartya Sen developed the Human Development Index (HDI) in 1990. The HDI is an indicator used to measure human development globally. It is based on the expansion of people's choices, including access to knowledge, health, and income. The HDI has been adopted by the UNDP and is published in the Human Development Report (HDR).

Human development in Indonesia is measured using HDI published by the Central Statistics Agency (BPS). The HDI is defined as a composite index formed from dimensions of knowledge, a long and healthy life, and decent standard of living (BPS-Statistics Indonesia, 2014). The HDI score ranges from 0 to 100, with higher scores indicating better the quality of human development in the region.

Since 2014, the HDI has used a new method to measure quality of human development. This method incorporates expected and average years of schooling, life expectancy, and adjusted expenditure per capita (BPS-Statistics Indonesia, 2014).The HDI can be used to compare human development across districts in Indonesia. HDI scores for each district are grouped into categories: very high HDI (80-100), high HDI (70-79), medium HDI (60-69), and low HDI (0-59) (BPS-Statistics Indonesia, 2014). Districts with low and medium HDI scores require attention as they lag significantly in terms of human development quality. Efficient, effective, and prioritized use of local government expenditures is essential to close the HDI gap among districts in Indonesia.

Previous studies have been conducted to determine the effect of government expenditures on HDI, but the empirical results have been inconsistent. Some earlier studies found that government expenditure positively affects HDI. Sulistyowati et al. (2017), Arfiyansyah (2018), Sabar (2019), Hadinata et al. (2020), Hadiyanto et al. (2022), Kousar et al. (2023), and Miranda-Lescano et al. (2023; 2024) found that education expenditure and health expenditures positively impact HDI. Meanwhile, Septiani (2022) found that goods and services expenditure and capital expenditures also positively effect HDI.

Conversely, some studies found that government expenditure negatively impact HDI. Agustina et al. (2016), Soleha & Fathurrahman (2017), Siregar et al. (2018), Haque & Khan (2019), Mongan (2019), and Onabote et al. (2023) found that education and health expenditures negatively impact HDI. Additionally, Sasti & Latrini (2019) and Kakadir et al. (2021) found that capital expenditure negatively affects HDI.

Local government expenditure continues to increase annually, yet nearly half of the districts in Indonesia still have low and medium HDI scores. Previous studies have explored the impact of local government expenditure on HDI, but the conclusions have varied. Therefore, further research is needed to provide new evidence on the role of local government expenditure in improving HDI in Indonesia. This research can inform stakeholders in formulating local government expenditure and human development policies toward the vision of Indonesia Emas 2045. The novelty of this study lies in its focus on local government at the district level and the classification of local government expenditure by function and type.

This study aims to identify the effect of the realization of education, health, and economic expenditures by local governments on HDI, and to assess the impact of employee, goods and services, and capital expenditures by local governments on HDI.

This study provides recommendations for stakeholders to identify the local government expenditure categories that most effectively improve HDI, allocate local government budgets proportionally within the APBD, and measure the performance of local government expenditure on human development outputs and outcomes. This study tests six hypotheses, outlined as follows: H1: The realization of education

expenditure has a significant positive effect on HDI; H2: The realization of health expenditure has a significant positive effect on HDI; H3: The realization of economic expenditure has a significant positive effect on HDI.; H4: The realization of employee expenditure has a significant positive effect on HDI; H5: The realization of goods and services expenditure has a significant positive effect on HDI; and H6: The realization of capital expenditure has a significant positive effect on HDI.

RESEARCH METHODS

This study was conducted using a quantitative approach, utilizing secondary data with details as specified in Table 1. Data collection was carried out through purposive sampling method to obtain local government expenditure data related to human development. The data sample consists of a panel dataset with 3.048 observations, consist of 508 districts in Indonesia during the 2017-2022 period.

Tabel 1. Variables and Data Sources

Variables	Descriptions	Measurements	Sources
Dependent Variable			
HDI (HDI)	Human development index, including knowledge, health, and a decent standard of living	Index	BPS
Independent Variable			
Education Expenditure (Edu)	Realization of education expenditure from local government budget	Billion IDR	DJPK
Health Expenditure (Health)	Realization of health expenditure from local government budget	Billion IDR	DJPK
Economic Expenditure (Econ)	Realization of economic expenditure from local government budget	Billion IDR	DJPK
Employee Expenditure (Emplye)	Realization of employee expenditure from local government budget	Billion IDR	DJPK
Goods and Services Expenditure (Goods)	Realization of goods and services expenditure from local government budget	Billion IDR	DJPK
Capital Expenditure (Capital)	Realization of capital expenditure from local government budget	Billion IDR	DJPK

Source: Data Processed, 2024

Data from local governments at the district level were selected because district-level governments are the closest institutions to understanding community issues. Local governments at the district level also have the authority to create policies aimed at improving the quality of human development through the roles of political equality, local accountability, and local responsiveness (Ananda, 2017).

Data for 2017-2022 were selected based on the accuracy of district-level local government expenditure data, which were audited by the State Audit Office (BPK), verified by local governments through local regulations (Perda), and comprehensively compiled by the Directorate General of Financial Balance (DJPK). This study does not include districts in Jakarta province due to the unavailability of data.

A panel data regression model is used to determine the effect of district-level local government expenditure on HDI. The panel data regression model is divided into two equations: local government expenditure by function (Eq. 1) and local government expenditure by type (Eq. 2), due to the same total accumulation of government expenditure in the APBD but different values in disaggregated variables. The panel data regression model equation with log-form data variables can be written as follows:

$$\ln HDI_{it} = \alpha_0 + \beta_1 \ln Edu_{it} + \beta_2 \ln Health_{it} + \beta_3 \ln Econ_{it} + \varepsilon_{it} \quad \text{..... (1)}$$

$$\ln HDI_{it} = \alpha_0 + \beta_4 \ln Emplye_{it} + \beta_5 \ln Goods_{it} + \beta_6 \ln Capital_{it} + \varepsilon_{it} \quad \text{..... (2)}$$

Where α_0: intercept, $\beta_{1,2,3,4,5,6}$: coefficient, i: districts, t: year, and ε: error term.

Panel data regression analysis can be conducted using the Common Effect Model (CEM), Fixed-Effect Model (FEM), and Random Effect Model (REM). Model selection tests are performed using the Chow test, Lagrange Multiplier test, and Hausman test. The Chow test is used to choose between the CEM and FEM, with H_0: CEM. Lagrange Multiplier test is used to choose between CEM and REM, with H_0: CEM. The Hausman test is used to select between REM and FEM, with H_0: REM.

The Gauss-Markov assumptions indicate that an increased number of observations leads estimated parameters to the true values (linear), the average or expected value of the parameter is equal to the true value (unbiased), and that there is minimum variance (efficient). The Gauss-Markov assumptions can be verified by conducting normality tests (skewness-kurtosis test), multicollinearity tests (tolerance/TOL and variance inflation factor/VIF), heteroskedasticity tests (Wald test), and autocorrelation tests (Wooldridge test). The initial hypotheses (H_0) of the Gauss-Markov assumptions are that the residuals of estimation results have a normal data distribution, no partial correlation, no heteroscedasticity, and no serial correlation.

RESULTS AND DISCUSSION

The descriptive statistics, which include information on the Human Development Index (HDI) and local government expenditures at the district level in Indonesia from 2017 to 2022, are presented in Table 2.

Table 2. Statistical Description Test Results

Variables	Obs	Period	Mean	Std.Dev	Min	Max
HDI (HDI)	3.048	2017-2022	69,34	6,51	27,87	87,69
Education Expenditure (Edu)	3.048	2017-2022	418,78	325,57	46,61	2.670,11
Health Expenditure (Health)	3.048	2017-2022	264,55	195,49	33,66	2.289,35
Economic Expenditure (Econ)	3.048	2017-2022	138,45	150,30	6,90	2.199,96
Employee Expenditure (Emplye)	3.048	2017-2022	569,49	368,81	72,97	2.710,77
Goods and Services Expenditure (Goods)	3.048	2017-2022	422,84	348,82	87,54	4.892,06
Capital Expenditure (Capital)	3.048	2017-2022	288,94	214,30	32,74	2.754,31

Source: Data Processed, 2024

The average Human Development Index (HDI) score at the district level is 69.34, with the highest score at 87.69 and the lowest at 27.87. The high standard deviation of 6.51 indicates a significant disparity in human development across districts.

As shown in Table 2, employee expenditure has the highest average realization, amounting to IDR 569.49 billion, indicating that a substantial portion of local government expenditures is allocated to civil servant salaries. A higher realization of employee expenditure limits the fiscal space available for financing other government programs and activities related to human development. Additionally, employee expenditure has the highest standard deviation among local government expenditures at 368.81, reflecting considerable disparities across districts in funding civil servant salaries.

Conversely, economic expenditure has the lowest average realization, at IDR 138.45 billion, suggesting that local governments allocate relatively low amounts to programs and activities aimed at promoting per capita income growth. The standard deviation of economic expenditure is the lowest at 150.30, indicating relatively consistent and modest utilization of economic expenditure across districts.

Table 3. Panel Data Regression Model

Selection Tests	P-values	
	Eq. (1)	**Eq. (2)**
Chow test	0.0000	0.0000
	FEM*	FEM*
Lagrange multiplier test	0.0000	0.0000
	REM*	REM*
Hausman test	0.0005	0.0005
	FEM*	FEM*

Note: * selected panel data regression model
Source: Data Processed, 2024

Based on Table 3, the panel data regression in eq.1 and eq.2 are analyzed using fixed-effects model. The fixed-effects model takes into account the heterogeneity of local government expenditure at district level, which is consistently kept the same for each district over the observation period, as well as the constant influence of the error term (Ekananda, 2019).

The skewness-kurtosis tests of eq.1 and eq.2 have a significant Prob>chi2, indicating that "H" _"0" is rejected and residual are not normally distributed. It occurs because certain districts in Papua and West Papua have quite lower HDI and local government expenditures than others. In large data samples such as those used in this study (3.048 observations), the F-stat and t-stat values are obtained under the assumption that the error term follows a normal data distribution (Gujarati & Porter, 2009).

The residuals of eq.1 and eq.2 have a TOL<1 and VIF>10, indicating the presence of multicollinearity. It will cause increased standard error of coefficients, resulting in smaller t-stat and independent variables becoming statistically insignificant to dependent variable, eventhough the R-squared value is high. Multicollinearity occurred from the partial correlation between local government expenditure as an independent variable due to increased local government expenditure at the same level in APBD. In this study, multicollinearity is not corrected by omitting independent variables, as government expenditure is tested to achieve the study purposes. Given the availability of data samples for empirical analysis, sometimes multicollinearity can be addressed by doing nothing (Gujarati & Porter, 2009).

The wald tests of eq.1 and eq.2 have a significant Prob>chi2, indicating that "H" _"0" is rejected and residual are heteroscedastic. If heteroskedasticity occurs, the estimation model is still linear and unbiased, but it is not efficient because there is no minimum variance. Heteroscedasticity in the form of residual variance always change with each observation due to the different districts characteristics, corrected by robust standard error. It had an impact that coefficient of local government expenditure unchanged, the residual variance remained heteroscedasticity, but the variance of the local government expenditure coefficient was more efficient (Gujarati & Porter, 2009).

The Wooldridge tests of eq.1 and eq.2 have a significant Prob > F, indicating that "H" _"0" is rejected and the residual has an autocorrelation. If autocorrelation occurs, the estimation model is still linear and unbiased, but it is not efficient because there is no minimum variance. In this study, autocorrelation was not corrected by transforming the data samples into first-difference form, but corrected by robust standard error (Gujarati & Porter, 2009).

Table 4. Panel Data Regression Fixed-Effect Model Results

Independent Variables	Dependent Variables: lnHDI					
	Equation (1)			Equation (2)		
	Coefficients	Robust Std. error	P-values	Coefficients	Robust Std. error	P-values
lnEdu	0.0090**	0.0029	0.002			
lnHealth	0.0268***	0.0015	0.000			
lnEcon	0.0084***	0.0004	0.000			
lnEmplye				0.0499***	0.0057	0.000
lnGoods				0.0412***	0.0014	0.000
lnCapital				- 0.0116***	0.0009	0.000
Constant	3.999***	0.0143	0.000	3.7487***	0.0372	0.000
N		3048			3048	
Prob > F		0.0000			0.0000	
R-squared		0.462			0.443	

Note: significance * p<0.05; ** p<0.01; *** p<0.001
Source: Data Processed, 2024

The panel data regression model results can be detailed in Table 4. Based on the P>|t| values, education, health, economic, employee, and goods and services expenditures have a significant positive partial effect on HDI, while capital expenditure has a significant negative partial effect on the HDI.

Based on the Prob>F values, education expenditure, health expenditure, economic expenditure, employee expenditure, goods and services expenditure, and capital expenditure simultaneously significantly affect HDI. Based on the R-squared values, the relationship between the dependent variables over the observation period can be explained by the independent variables to the extent of 46,2% (eq.1) and 44,3% (eq.2), with the remaining portion being the error term, i.e., variables outside the estimation model.

Education expenditure has a significant positive effect on HDI. An increase in education expenditure realization by 1% will increase the HDI score by 0,009% index points, ceteris paribus. Several factors determine the small coefficient value and the large share of education expenditure. First, there is limited fiscal space for most local governments to fund priority programs and activities at the district level, even though Indonesia's average share of education expenditures is the highest in the world (World Bank, 2020). Second, the inefficient and ineffective use of education expenditure due to inadequate monitoring of output and outcomes related to district-level human development (World Bank, 2020).

The results are consistent with the studies conducted by Sulistyowati et al. (2017), Arfiyansyah (2018), Sabar (2019), Hadinata et al. (2020), Hadiyanto et al. (2022), Kousar et al. (2023), and Miranda-Lescano et al. (2023; 2024). Arfiyansyah (2018) found that education expenditure has a higher coefficient than economic expenditure but a lower coefficient than health expenditure in improving the HDI. This result is attributed to government targets in the education sector, such as teacher allowances, specifically the Tunjangan Profesi Guru (TPG), subsidies for students like the Kartu Indonesia Pintar (KIP), and the Bantuan Operasional Sekolah (BOS).

Health expenditure has a significant positive effect on HDI. An increase in health expenditure realization by 1% will increase the HDI score by 0,027% index points, ceteris paribus. The large coefficient value and the small share of health expenditure make health expenditure dominant in improving HDI at the district level in Indonesia. Health expenditure is also used to subsidize JKN, with 267.784.196 participants (95,94%) in 2024, indicating an increase in universal health coverage for public financial protection (BPJS Kesehatan, 2024).

Health expenditure should prioritize the implementation of promotive and preventive programs over curative ones for several reasons. First, promotive and preventive programs contribute more effectively to improving public health, yet they typically receive a smaller budget allocation (World Bank, 2020). Second, treatment using personal funds, namely out-of-pocket, amounts to 61,80% and continues to increase due to some drugs are not covered by JKN. Third, mostly 68,15% of out-of-pocket health costs are spent on curative treatments . Health promotion is the initial stage of the precede-proceed theory used in health planning processes to improve public health towards a better quality of life (Green, 1980). Health promotion is an extension of health education essential in enhancing people's ability to maintain physical, mental, and social health. Meanwhile, Disease prevention efforts are also important for people to undertake both before and during illness to avoid and reduce the negative impact of a disease (Leavell & Clark, 1965). Therefore, in recent years, the government has prioritized promotive and preventive efforts over curative ones to improve public health in Indonesia, as it can reduce the budget allocation of health expenditure, reduce disease cases, and improve life expectancy (Kemenkes, 2022; BPS, 2023; Kemenkeu, 2023).

The results are consistent with the studies conducted by Sulistyowati et al. (2017), Arfiyansyah (2018), Sabar (2019), Hadinata et al. (2020), Hadiyanto et al. (2022), Kousar et al. (2023), and Miranda-Lescano et al. (2023; 2024). Miranda-Lescano et al. (2023) found that realizing health expenditure in both developed and developing countries can improve HDI, as determined by the share of budget allocation for health expenditure and local government policies.

Economic expenditure has a significant positive effect on HDI. An increase in economic expenditure realization by 1% will increase the HDI score by 0,008% index points, ceteris paribus. Several factors determine the small coefficient value and the small share of economic expenditure. First, there is limited fiscal space, making economic expenditure the lowest proportion of local government expenditure by function in APBD, even though economic expenditure is important in reducing poverty at the district level (Budi Setiawan & Adzim, 2018). Second, economic programs and activities are funded by central government expenditure, such as the provision of connectivity infrastructure, subsidies for fuel, electricity, and fertilizer, and subsidies for people experiencing poverty and MSMEs, namely Kredit Usaha Rakyat (KUR). Third, there is no link and match between vocational student skills and industry, resulting in many vocational school graduates being unemployed (World Bank, 2020).

The results are consistent with the studies conducted by Arfiyansyah (2018) and Sabar (2019). Sabar (2019) found that economic expenditure used to provide infrastructure can increase the HDI of the districts in South Sulawesi Province, as it facilitates the mobility of the public's economic activities.

Employee expenditure has a significant positive effect on the Human Development Index (HDI). A 1% increase in employee expenditure is associated with a 0.050% increase in the HDI score, ceteris paribus. To maximize efficiency, employee expenditure should be managed through policies such as civil servant attrition, performance management, and the digitization of clerical work (Masduki et al., 2022). The results are consistent with the studies conducted by Sasti & Latrini (2019) and Mongan (2019). Sasti & Latrini (2019) found that employee expenditure allocated for doctors contributes to higher life expectancy and HDI. Mongan (2019) also found that education expenditus that provide educational facilities and infrastructure, including teacher salaries, will increase HDI in the district.

Goods and services expenditure has a significant positive effect on the Human Development Index (HDI). A 1% increase in goods and services expenditure is associated with a 0.041% increase in the HDI score, ceteris paribus. To enhance efficiency, goods and services expenditure should be optimized through the adoption of technologies and

innovative work practices (Masduki et al., 2022), minimizing site visits, off-site meetings, and honoraria, and integrating budget planning with public property maintenance to preserve asset value (Nurhani & Zen, 2023).

The findings are consistent with studies conducted by Sasti & Latrini (2019), Kakadir et al. (2021), and Septiani (2022). Septiani (2022) found that goods and services expenditure for procurements of goods/services and operational activities in local government affairs at the district level enhances both the HDI and the economy in the short run.

Conversely, capital expenditure has a significant negative effect on HDI. A 1% increase in capital expenditure is associated with a 0.012% decrease in the HDI score, ceteris paribus. This negative impact of capital expenditure on HDI can be attributed to several factors. First, limited fiscal space often results in capital expenditure being allocated the smallest share of local government expenditure by type in the regional budget (APBD) (Kakadir et al., 2021). Second, the realization of capital expenditure is relatively low. Third, the budget allocation for capital expenditure is not related to education and health functions (Kakadir et al., 2021).

To improve the effectiveness of capital expenditure, it should be guided by the principles of 'spending better,' which include efficiency, effectiveness, and prioritization. First, the budget allocation for capital expenditure in the APBD should be increased to support human development programs and activities. Second, the outputs and outcomes of capital expenditure related to human development should be refined, with a focus on prioritizing technology over physical infrastructure. Finally, the quality of budget planning, procurement processes, and the capacity of financial management officers should be enhanced to accelerate budget execution.

The results are consistent with the studies conducted by Sasti & Latrini (2019) and Kakadir et al. (2021). Sasti & Latrini (2019) found that capital expenditure have negative effect on HDI because newly constructed school buildings are not immediately filled by new students, and the share of budget allocation for capital expenditure is relatively low.

Districts with limited fiscal space need to increase their fiscal capacity to increase allocation of local government expenditure in APBD. First, by increasing local revenue namely pendapatan asli daerah (PAD) through long-run investment (Fafurida & Pratiwi, 2017), clear local regulations, local tax intensification and expansion (Oktavilia et al., 2020), and economic potential sector (Oktavilia et al., 2021). Second, by improving transfer funds through coordination with the central government. Improving fiscal capacity can reduce budget allocation disparities accross districts in Indonesia (World Bank, 2020).

Local government expenditure performance must be measured to ensure the implementation of spending better principles of efficiency, effectiveness, and prioritization. Local governments can adopt the concept of budget performance indicator, namely Indikator Kinerja Pelaksanaan Anggaran (IKPA) which has basic aspects such as planning suitability, efficiency and effectiveness of budget execution, and regulatory compliance. The implementation of budget performance indicator is expected to improve the quality of local government expenditure.

The use of technology is also necessary in local government expenditures management. The use of the Integrated Financial Management Information System (IFMIS) will facilitate the monitoring of local government expenditure performance from the planning, budgeting, execution, reporting, and accounting. IFMIS can be used to monitor the achievement of outputs and outcomes based on the objective of programs and activities, ensuring that local government expenditures are used refers to the principles of efficiency, effectiveness, and prioritization (World Bank, 2011; IMF, 2019; Sudarto, 2019)

CONCLUSION

The panel data regression with fixed-effect model is used to identify the effects of local government expenditure on HDI. This study found that education expenditure, health

expenditure, economic expenditure, employee expenditure, goods and services expenditure have significant positive effect on HDI, while capital expenditure has significant negative effect on HDI. This study provides recommendations for stakeholders to understand the dominant role of health expenditure in increasing HDI, allocate more budget to economic and capital expenditure, reduce budget allocation to employee expenditure and goods and services expenditure, and measure the performance of local government expenditure.

The findings and recommendations of this study are based on statistical analysis of local government expenditure and its effect on HDI. Further study could focus on analytical techniques using the direct or indirect effects and the short-run or long-run effects on HDI.

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