

*Research Article*

# Analysis of the Effect of Human Development Index, Poverty, and Islamic Philanthropy on Economic Growth: An Empirical Study in Aceh Province

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**Abstract:** Inclusive economic growth is a key priority in regional development, particularly in areas that adopt an Islamic economic system, such as the City of Banda Aceh. However, challenges such as persistent poverty and the suboptimal utilisation of Islamic philanthropy continue to hinder the strengthening of regional economic performance. This study aims to examine the effects of the Human Development Index (HDI), poverty rate, and zakat/infaq/sedekah (ZIS) on the economic growth of Banda Aceh from 2015 to 2024. A quantitative approach was employed, using a time series linear regression model. Secondary data were obtained from the Central Bureau of Statistics (BPS), Baitul Mal Aceh, and other official sources. The findings reveal that HDI has a positive and statistically significant effect on economic growth. In contrast, poverty and ZIS do not have a significant individual impact. Nevertheless, the model demonstrates strong explanatory power, with a significance level of 0.002. These results suggest that improving human capital through HDI is a critical driver of economic growth. Accordingly, development policies in Banda Aceh should prioritise investment in education and health sectors, alongside the expansion of productive zakat programmes, to foster sustainable economic growth rooted in Islamic values.

**Keywords:** Banda Aceh; Economic growth; Poverty; Zakat; Islamic economics.

## 1. Introduction

A region's economic growth reflects its success in managing resources and creating community welfare. However, sustainable economic growth is not only determined by Gross Regional Domestic Product (GRDP) figures, but is also influenced by the quality of human development, poverty levels, and inclusive social structures, including the existence of religious value-based philanthropy. In this context, an Islamic economic-based development approach is an important alternative that integrates spiritual, social, and economic dimensions in one development framework (chapra, 2016).

The city of Banda Aceh, as the capital of Aceh Province and one of the cities that officially implements Islamic law, has distinctive economic and social dynamics. Despite this, Banda Aceh has shown relatively stable economic growth in recent years. The following is data on the economic growth of Banda Aceh City.

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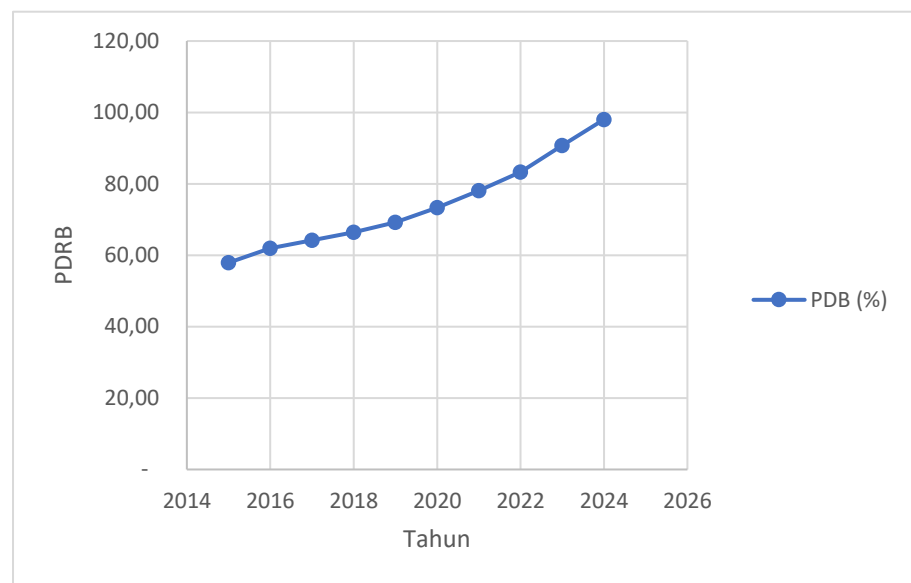
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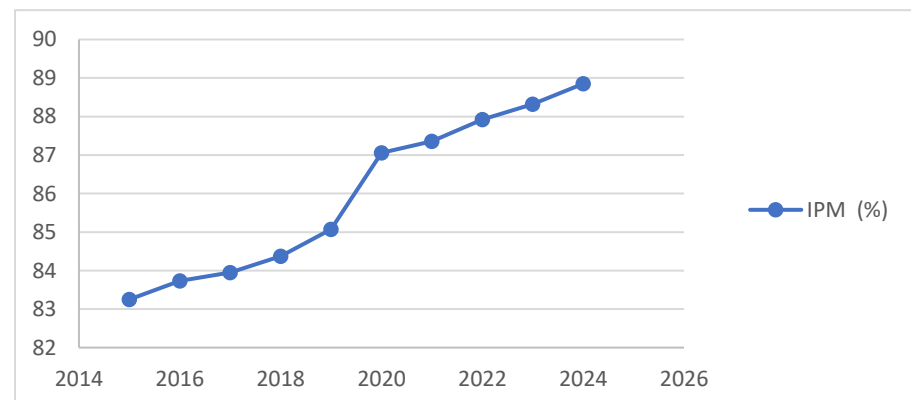
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**Figure 1.** Economic Growth Data (GRDP) of Banda Aceh City 2015-2024  
Source: BPS (data processed)

Figure 1 shows the economic growth trend of Banda Aceh over the past 10 years based on GRDP values. The data shows a relatively consistent and positive development, indicating stable regional economic growth from year to year. The highest increase occurred between 2020-2024, reflecting the economic recovery in that period.

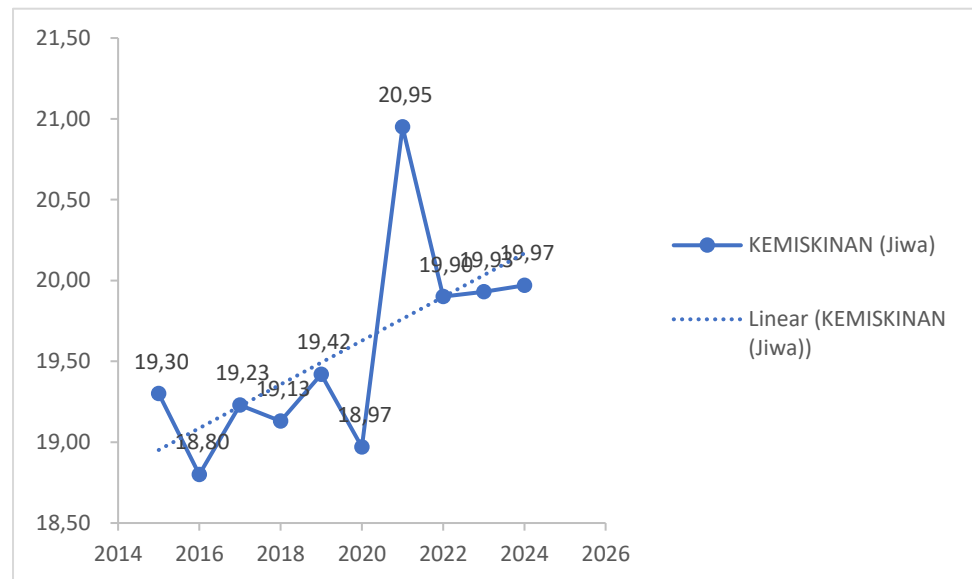
The economic growth of Banda Aceh City continues to experience a positive trend. This is inseparable from the various driving factors that influence it. Macro factors such as the Human Development Index and poverty levels are among the factors that trigger negative and positive growth in a region. Positive economic growth in the last 10 years has not reduced Aceh out of the highest poverty rate in Sumatra; social inequality and poverty alleviation challenges are still major issues in Aceh. BPS data recorded that the poverty rate in Banda Aceh fluctuated during the period 2015-2023, while the Human Development Index (HDI) increased gradually to reach 86.32 in 2023, which is categorised as high (BPS Kota Banda Aceh, 2024). On the other hand, the recorded history of the HDI of Banda Aceh City in 2022 was ranked second nationally with a value of 87.92 after Yogyakarta with a value of 87.18. Based on data from the Diskominfo of Banda Aceh City (2022), the HDI recorded by Banda Aceh City is far above the HDI of Aceh Province, which is 72.18, and the Indonesian HDI of 72.29. This is a good achievement for the city of Banda Aceh. The following data on HDI and poverty in Banda Aceh City are presented in the figure.



**Figure 2.** Human Development Index (HDI) Data for Banda Aceh City 2015-2024  
Source: BPS (data processed)

The graph shows the development of the Human Development Index (HDI) from 2015 to 2024. The HDI is a composite indicator that measures achievements in three basic dimensions of human development: health (long and healthy life), education, and a decent standard of living. The graph shows a consistent and significant upward trend over the last ten-year period, with a positive growth rate also reflected in the upward linear trend line.

In 2015, the HDI was recorded at 83.25 per cent, which has continued to increase yearly. The increase in HDI began to show a sharp spike in 2020, where the value reached 87.06%. This significant increase indicates an acceleration of human development in that year. Although 2020 is known as the early year of the pandemic, this spike was likely the result of accelerated digitisation of education, distribution of social assistance, and massive healthcare reforms. After 2020, the HDI continued to rise more steadily but remained positive.



**Figure 3.** Poverty Data for Banda Aceh City 2015-2024

Source: BPS (data processed)

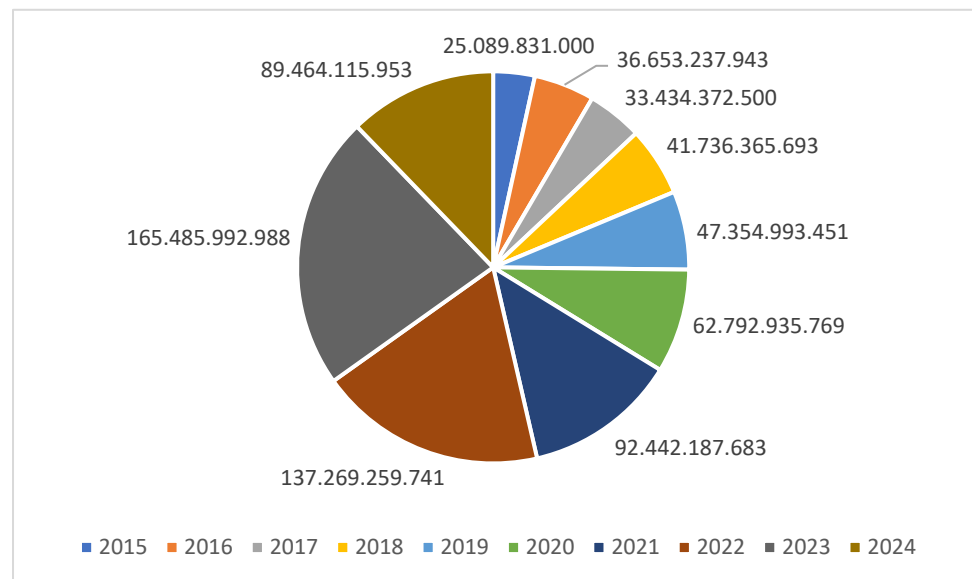
The graph shows the development trend of the number of poor people (in units of people) from 2015 to 2024. In general, the data shows a fluctuating pattern with a tendency to increase linearly, especially after 2020. In the early period, from 2015 to 2020, the poverty rate tended to stabilise, even showing a slight decline. Starting from around 19.30 million people in 2015, this number fell to 18.80 million people in 2016, and then fluctuated within the range of 18.97 to 19.42 million people. This shows that during this phase, various poverty reduction programmes were relatively able to maintain stability and prevent a significant spike in the poverty rate. However, in 2021, there was a sharp spike, where the number of poor people increased dramatically to around 20.95 million.

This spike is most likely related to the impact of the COVID-19 pandemic, which has caused significant economic shocks to the informal sector, MSMEs, as well as increased unemployment and decreased purchasing power. 2021 marked the highest point of poverty in a decade. After the spike, the graph shows a recovery effort, although it has not succeeded in returning the poverty rate to pre-pandemic levels.

Data from 2022 to 2024 shows a stable trend in the range of 19.89 to 19.97 million people. This means that despite the improvement from the peak of the 2021 crisis, the poverty rate remains higher than in the 2015-2020 period. The linear trend line shown in the graph reinforces the conclusion that in general there has been an upward trend in the number of poor people in the last ten years, although not drastically. This data illustrates that the poverty challenge is still not over.

In addition to HDI and poverty, Islamic philanthropy, especially zakat, infaq and sadaqah (ZIS), is an important instrument in the Islamic economy that can serve as a mechanism for wealth redistribution, social stabilisation and economic empowerment of the lower classes. Several studies, such as those conducted by Widiastuti et al. (2022) and Dirie et al. (2024) show that Islamic philanthropy contributes positively to poverty reduction and the

improvement of the quality of human resources in various regions in Indonesia. On the other hand, Khasandy and Badrudin (2019) stated in their research that zakat in Indonesia does not affect economic growth.



**Figure 4.** Zakat, Infaq, and Sadaqah ZIS Data of Banda Aceh City 2015-2024  
Source: Baitul Mal Aceh (data processed)

Figure 4 shows the increase in ZIS (Zakat, Infaq, Sadaqah) distribution from 2015 to 2023. In general, the graph shows a very positive exponential growth trend, with significant increases especially in the last three years, namely in 2021, 2022, and 2023. The distribution illustrates the high level of community need for zakat funds.

Previous studies have discussed many factors that affect the economic growth of a country or region. Meanwhile, time series data-based studies at the district/city level that specifically examine the relationship between HDI, poverty, ZIS, and economic growth are still relatively few. Thus, this research is important to fill the void and provide evidence-based policy in strengthening the integration of Islamic value-based development in Muslim-majority areas.

## 2. Research Methods

This research uses descriptive and inferential quantitative approaches with time series data analysis methods during the period 2015 to 2024. The purpose of this study is to determine the effect of the Human Development Index (HDI), poverty level, and Islamic philanthropy (ZIS) represented by zakat, infaq, and sadaqah (ZIS) on economic growth in Banda Aceh City. The data used is secondary time series data from 2015 to 2024. Data analysis was carried out using a data series-based linear regression model, which can be formulated in the following equation:

$$PE_t = \beta_0 + \beta_1 \cdot IPM_t + \beta_2 \cdot KM_t + \beta_3 \cdot ZIS_t + \epsilon_t$$

Where:

$PE_t$  = Economic growth in the year

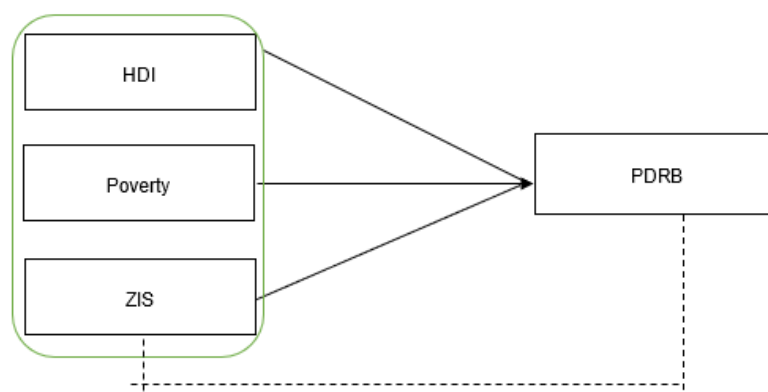
$HDI_t$  = Human Development Index in the year

$KM_t$  = Poverty level in the year

$ZIS_t$  = ZIS funds collected in the year

$\epsilon_t$  = error term.

The conceptual framework of the study is described as follows



**Figure 5.** Conceptual Framework

### Research Hypothesis

H1: HDI has a positive effect on economic growth in Banda Aceh City.

H2: Poverty hurts economic growth in Banda Aceh City.

H3: ZIS has a positive effect on economic growth in Banda Aceh City.

### 3. Results and Discussion

Based on the results of data processing, the results of the classical assumption test, namely normality, multicollinearity and heteroscedasticity, are as follows:\

**Table 1.** Data Normality Test

One-Sample Kolmogorov-Smirnov Test			
			PDB
N			10
Normal Parameters <sup>a,b</sup>	Mean		74.3280
	Std. Deviation		13.07587
Most Extreme Differences	Absolute		.151
	Positive		.151
	Negative		-.105
Test Statistic			.151
Asymp. Sig. (2-tailed) <sup>c</sup>			.200 <sup>d</sup>
Monte Carlo Sig. (2-tailed) <sup>c</sup>	Sig.		.744
	99% Confidence Interval	Lower Bound	.732
		Upper Bound	.755
a. Test distribution is Normal.			

The data in the research results are normally distributed as indicated by the sig.value of  $0.002 > 0.005$ . In addition, there is also no multicollinearity and heteroscedasticity in the model. So that means the data can be continued to the regression analysis stage. The results of multiple regression tests are obtained as follows:

**Table 2.** Uji Regresi Berganda

Model				t	Sig.	VIF	F	Adj R square
		B	Std. Error					
1	(Constant)	411,679	121,766	-3,381	,015		20,150	0,865
	IPM	5,728	1,507	3,801	,009	3,982	Sig. 0,002	
	ZIS	,011	,065	,175	,867	3,682		
	KM	-,375	3,338	-,112	,914	1,761		
a. Dependent Variable: PDB								

Based on the output results. The regression equation can be arranged as:

$$PE = 411,679 + 5,728IPM + 0,011ZIS - 0,375KM + e$$

The interpretation of the regression equation is described as follows:

- Economic growth is predicted to be 411,679. Although it has no practical significance (since HDI, ZIS, and KM cannot be zero), this value is the cut-off point of the model estimation
- Every 1 point increase in HDI in Banda Aceh city is estimated to increase the economic growth rate by 5.728 points, *ceteris paribus*. This suggests that improvements in the quality of education, health, and per capita expenditure significantly boost regional economic productivity. This result is consistent with the study of Rusanti et al. (2023) and Widiastuti et al. (2022).
- Every increase in zakat, infaq, and sadaqah funds by 1 million rupiah is expected to increase economic growth by 0.011 points, assuming other variables are constant. Although the coefficient is relatively small, this positive direction supports the literature that ZIS acts as an instrument of socio-economic intervention (Dirie et al., 2024). However, the effect may still be limited at the macro level due to the scale of zakat distribution that is not yet comprehensive.
- Every 1 per cent increase in poor population has the potential to reduce economic growth by 0.375 points. This negative coefficient is consistent with the endogenous growth theory, which states that poverty reduces productivity, aggregate consumption, and human capital capacity (Todaro & Smith, 2015).

Determine the effect of each independent variable on economic growth in Banda Aceh City. A t-test was conducted on the Human Development Index (HDI), poverty level, and zakat, infaq, and sadaqah (ZIS) variables. This test aims to test whether each variable contributes significantly to explaining variations in the dependent variable, namely real Gross Regional Domestic Product (GRDP) as a proxy for economic growth, during the period 2015 to 2024. The t-test results are presented in Table 2, which shows the coefficient value, t-count value, and significance level (p-value) for each variable. The decision-making criteria are based on a significance value of 5% ( $\alpha = 0.05$ ), testing the null hypothesis ( $H_0$ ) that there is no significant effect between the independent variables on economic growth. The following is a more detailed description of the t-test results for each variable:

- The t-test results show that the Human Development Index (HDI) variable has a t-count value of 3.801 with a significance level of 0.009, which is below the 5% significance level ( $\alpha = 0.05$ ). Thus, it can be concluded that HDI has a positive and statistically significant effect on the labour market. On economic growth in Banda Aceh City during the period 2015 to 2024. So  $H_a$  is accepted, meaning that HDI has a positive and significant effect on economic growth. The regression coefficient of 5.728 indicates that every 1 point increase in HDI is expected to increase the value of real GDP by 5.728 million rupiah, assuming other variables are constant. This result indicates that improvements in the quality of education, health, and living standards of the people contribute positively to regional economic activity. This finding is consistent with

endogenous growth theory and supports the results of previous studies by Rusanti et al. (2023) and Widiastuti et al. (2022).

- The ZIS variable yields a t-count of 0.175 and a p-value of 0.867, well above the critical value of 0.05. This indicates that ZIS has no significant effect on economic growth, at least in this model. Although the direction of the coefficient is positive (0.011), likely, the effect of ZIS collection and distribution is not large enough to have a macroeconomic impact in the short term. This condition is in line with some previous research results, such as those by Majid et al. (2021) and Pimada & Prawatya (2024), which state that the impact of ZIS tends to be more evident in social dimensions such as poverty reduction or mustahik empowerment, but not significant enough to directly affect GDP.
- The t-test result of the poverty level variable shows a t-count of -0.112 with a significance of 0.914, which is also far above the significance threshold of 0.05. This means that poverty has no significant effect on economic growth in Banda Aceh City during the observation period. The negative coefficient of -0.375 is theoretically consistent with the literature, which states that poverty suppresses economic growth. However, this insignificance could be caused by several factors, such as limited sample size, long-term effects that have not been seen in the observation period, or the lack of integration of poverty alleviation programmes into the regional productive system. This finding is also similar to the study of Iskandar et al. (2021), which states that poverty reduction requires a long-term approach and does not always have a direct impact on growth indicators.

With an F-count value of 20.150 and a significance level of 0.002, it can be concluded that the regression model is simultaneously statistically significant. That is, together, HDI, poverty and ZIS variables have a significant effect on economic growth in Banda Aceh City. The Adjusted  $R^2$  value of 0.865 confirms the stability of the model, with adjustments to the number of independent variables and sample size. This shows that the model has a very strong predictive power, and no overfitting occurs despite the limited number of observations.

#### 4. Conclusion

This study aims to analyse the effect of Human Development Index (HDI), poverty rate, and zakat/infaq/sedekah (ZIS) on economic growth in Banda Aceh City during the period 2015-2024 with a time series regression approach. The results of the analysis show that HDI has a positive and significant effect on economic growth, which confirms the importance of improving the quality of education, health, and purchasing power of the community in driving regional economic performance. In contrast, poverty and ZIS variables do not show a statistically significant effect, although the direction of the coefficients is in line with theory. Simultaneously, the model is able to explain 86% of the variation in economic growth. Thus, strengthening human development strategies and optimising productive zakat distribution are key to inclusive and sustainable economic growth in Banda Aceh City.

Based on the research findings, it is recommended that the Banda Aceh City Government continue to strengthen human resource development through improving the quality of education, health, and purchasing power, as it has been proven to significantly drive economic growth. In addition, the management of zakat, infaq and sadaqah (ZIS) needs to be directed more productively, especially for the economic empowerment of mustahik and the development of MSMEs. Poverty alleviation programmes should also be synergised with sharia-based economic policies to make them more transformative. The use of technology in digitalising ZIS management will increase transparency and expand its economic impact.

Future research is recommended to add other variables such as regional investment or government spending to broaden the scope of the analysis. In addition, a time lag approach or inter-regional panel data can be used to overcome the limited time of observation and test for long-run effects. Qualitative approaches can also complement the understanding of ZIS programme effectiveness, while the use of alternative models such as ARDL or ECM can capture more complex relationship dynamics.

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