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Original Article

Does Gross Regional Domestic Product Fully Mediate Poverty Reduction? An Inter-District Analysis in Aceh Province

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Abstract: Over the last two decades, Aceh Province has been one of the provinces with a high poverty level that will reduce people's welfare. This study investigates the impact of fiscal level, human capital, and Zakat on poverty in Aceh Province, considering the mediating role of Gross Regional Domestic Product (GRDP). Using panel data regression analysis and path analysis, this study examined data from 23 districts/cities in Aceh from 2010 to 2022. Four models were developed to explore the relationships between variables. The results showed that fiscal level positively affected poverty, whereas human capital and Zakat had negative effects. The fiscal level negatively influences GRDP, whereas human capital and Zakat positively impact it. GRDP demonstrated a significant negative effect on poverty. When all variables were considered together, fiscal level positively affected poverty, while human capital, Zakat, and GRDP showed negative effects. Mediation analysis revealed that GRDP partially mediated the relationship between fiscal level and poverty, with fiscal level negatively affecting GRDP but positively influencing poverty. GRDP also partially mediates the effects of fiscal level, human capital, and Zakat on poverty. These findings suggest that the Aceh Government should focus on effectively managing central government transfer funds and regional revenues to improve public welfare and reduce poverty. This study highlights the complex interplay between fiscal policies, human capital development, zakat distribution, and economic growth in addressing poverty in the Aceh Province. Further research and policy interventions should consider these relationships to develop more effective strategies for poverty reduction in this region.

Keywords: Poverty; Gross Regional Domestic Product; Fiscal Level; Human Capital; Zakat.

1. Introduction

Poverty is a socio-economic problem that receives much attention in all fields. Poverty is a lack of money and goods to ensure survival (Todaro & Smith, 2012). Poverty is also related to limited employment opportunities and usually, those who are categorized as poor (people experiencing poverty) do not have jobs (unemployment), and their education and health levels are generally inadequate (Hafizd et al., 2018). Poverty in chronically poor households can cause these households to fall into “Poverty Traps”. Poor households will find it more difficult to get out of poverty traps if there are structural problems in the household. Poverty is a big problem that must be considered in its resolution

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because the problem of poverty will cause other new problems (Jacobus et al., 2018). In Indonesia, poverty is a major problem that can hamper economic growth due to weakened purchasing power. Social problems are increasing due to high crime rates, low levels of education and so on. Although poverty cannot be completely eradicated, poverty alleviation must be done. The findings state that sex ratio, income and education are factors that make an important contribution to the non-poor group. At the same time, the dependency rate and the number of family members are factors that make an important contribution to the poor group (Rahman et al., 2021).

Poverty is a serious problem in Indonesia, especially in Aceh Province. Aceh is one of the provinces in Indonesia that is not immune from the problem of poverty. Based on data from the Central Statistics Agency (BPS) for the last five years, Aceh Province has almost always been the poorest province on the island of Sumatra. The problem of poverty is multidimensional related to social, economic, cultural, and other aspects. Because poverty is multidimensional, it requires multidimensional solutions as well. Many central and local government programs have been planned and implemented to reduce poverty. Multidimensional poverty in Aceh Province can be influenced by several factors, including fiscal conditions, human capital, GRDP, including Zakat which not all provinces apply this Zakat. Poverty can be reduced through increased income. The income of a region can be observed through the Gross Regional Domestic Product (GRDP). GRDP will describe a region's economic activity level from the goods and services produced. An increase in GRDP will indirectly increase people's income because the economy continues to grow, increasing people's prosperity and reducing poverty (Arifin & Hendriyani, 2022). However, this is provided that the increase in GRDP can be more favorable to the poor, such as obtaining income because more jobs are available for the poor. Implicitly, the government is expected to be agile in distributing the benefits of economic activity reflected in the increase in GRDP, such as maximizing the capital-intensive industrial and manufacturing sectors (Sembiring et al., 2020).

In reducing poverty, fiscal decentralization also plays an important role. Fiscal decentralization will positively impact reducing the number of poor people if an increase in district/city income accompanies it. Fiscal decentralization can be a driver and driver of GRDP prospects in autonomous regions. To determine the ability of local governments to implement fiscal decentralization, it can be seen from the ratio of the degree of fiscal decentralization (Sari et al., 2023). Fiscal capability will reflect the level of independence of a region or dependence on funds provided by the central government. Fiscal decentralization can reduce poverty towards better changes in terms of political structure and social attitudes between governments towards the poor. Regions that can show good regional financial performance in the era of fiscal decentralization, as indicated by the ability of regions to achieve a high proportion of local revenue above the national average and a low level of dependence on central government funds (Awalu Pasholihah & Anwar, 2023).

A more important factor to be addressed is the human capital factor. Poverty is closely related to the quality of human capital. If human capital is of high quality, poverty will be addressed quickly. Investment in education and health must be considered to achieve this goal (Aimon, 2012). Quality human capital results from the construction of education, health, and a well-directed standard of living (Mustika, 2013). The success of human development can be seen from how much the fundamental problems of society can be resolved (Maulida & Silvia, 2016). Meier et al. (2000) stated that human capital directly contributes to creating national wealth. The higher the average level of knowledge and skills society possesses, the easier it is for working-age individuals to understand, apply and benefit from technological advances and ultimately improve the nation's economic and living standards. A person will get a decent job when they have quality human capital and can produce goods and services in the economy. Thus, there will be an increase in GRDP, so human capital development, especially for the poor, will help them escape poverty. In addition to the previous poverty factors, Zakat is also expected to be one of the alternative policies to improve the economy. Zakat, Infaq, and Sadaqah are sources of state revenue. Income distribution between the rich and poor is one of the efforts in alleviating poverty in Indonesia. Zakat is one of the efforts to distribute income to people experiencing poverty. Zakat purifies the soul from miserliness, greed, and selfishness and positively impacts the community's economy by reducing poverty and increasing GRDP (Mustika et al., 2019).

2. Materials and Methods

The data analysis in this study employed panel regression to investigate the effects of fiscal capacity, human capital, Zakat, and GDP on poverty across 23 districts and cities in Aceh Province from 2010 to 2022. Panel regression was chosen because of its capacity to integrate cross-sectional and time-series data, enabling a more comprehensive and robust analysis. This approach allowed for examining variations within each district/city over time, while accounting for inter-district/city differences. The panel regression methodology facilitated the control of unobserved heterogeneity and provided enhanced insights into the interactions between the variables and their influence on poverty levels. The general equation model utilized in this study is as follows:

$$POV_{it} = \alpha + \beta_1 FD_{it} + \beta_2 HC_{it} + \beta_3 ZK_{it} + \varepsilon_{it}, \quad (1)$$

$$GRDP_{it} = \alpha + \beta_1 FD_{it} + \beta_2 HC_{it} + \beta_3 ZK_{it} + \varepsilon_{it}, \quad (2)$$

$$POV_{it} = \alpha + \beta_1 GRDP_{it} + \varepsilon_{it}, \quad (3)$$

$$POV_{it} = \alpha + \beta_1 FD_{it} + \beta_2 HC_{it} + \beta_3 ZK_{it} + \beta_4 GRDP_{it+}\varepsilon_{it}, \quad (4)$$

Where: i represents the district/city (cross-sectional units), t represents the year (time-series component), β0 is the intercept, POV is Poverty, FD is Fiscal Degree, HC is Human Capital, ZK is Zakat and GRDP is Gross Regional Domestic Product, β1,β2,β3,β4 are the coefficients of the independent variables, μi accounts for unobserved district/city-specific effects, ϵit is the error term, accounting for random variations.

2.1. Variables and Measurements

1. **Poverty**: The dependent variable, measured by the percentage of the population living below the poverty line in each district/city.
2. **Fiscal Degree**: An independent variable reflecting the fiscal capacity or budgetary strength of each district/city, represented by the ratio of regional revenue to total expenditures.
3. **Human Capital**: Represented by education and health indicators such as literacy rates and life expectancy, which are proxies for the quality of human resources.
4. **Zakat**: The total zakat funds collected and distributed in each district/city during the study period.
5. **Gross Regional Domestic Product (GDP)**: Each district/city's GDP is used as a mediating variable to assess its role in poverty reduction.

2.2. Data Sources and Estimation Techniques

The data for this study were obtained from official government publications and reports, including: Central Bureau of Statistics (BPS) for poverty rates, human capital indicators, and GDP data. Local government financial reports for fiscal capacity data. Zakat institutions in Aceh for data on zakat collection and distribution. The study employed three types of panel regression models—Pooled Ordinary Least Squares (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM)—to determine the most appropriate method for analyzing the data. The Hausman test was conducted to select between the fixed effects and random effects models, ensuring the robustness of the results. Furthermore, the analysis included diagnostic tests to check for multicollinearity, heteroskedasticity, and autocorrelation, which could affect the reliability of the estimates. If necessary, robust standard errors were applied to correct for any violations of regression assumptions.

2.4. Mediation Analysis

The study followed a stepwise regression approach to examine whether GDP is a mediating variable between fiscal capacity, human capital, Zakat, and poverty. This involved testing the direct effect of independent variables on poverty and the indirect effect via GDP, using Baron and Kenny's mediation framework. Sobel tests were conducted to confirm the significance of the mediating role of GDP in the relationship. This methodological framework aims to provide a comprehensive understanding of the factors influencing poverty and the extent to which GDP mediates these relationships, offering valuable insights for policymakers in Aceh Province.

3. Results

Table 1 presents the results of descriptive statistical analyses. The dataset comprised 299 observations from 23 districts/cities over 13 years. Poverty, measured in thousands of individuals, revealed that the mean percentage of the impoverished population in Aceh Province from 2010 to 2022 was 17.24%. The highest poverty rate was observed in Bener Meriah in 2010, reaching 26.22%, whereas the lowest rate was recorded in Banda Aceh City in 2020, at 6.90%. The standard deviation (4.04) was lower than the mean (17.24), indicating minimal variation in the poverty percentage data. Throughout the 2010-2022 period, among the 23 city districts, 45.82% (137 data points) of the observations exhibited poverty levels below the provincial average, whereas 54.18% (162 data points) showed poverty levels above the provincial average.

Table 1. Result of Descriptive Statistic Analysis

Statistics	POV	GRDP	FD	HC	ZK
Mean	17.24278	5454.116	75.38591	69.07779	7565.234
Median	17.68000	3962.710	73.59455	68.69000	4287.000
Maximum	26.22000	38489.98	95.30699	86.28000	112817.0
Minimum	6.900000	745.8600	50.88737	58.97000	96.00000
Std. Dev.	4.047000	5193.441	12.87927	5.090311	11878.43

Source: BPS Aceh, Directorate General of Financial Balance, and BAZNAS (2023)
Note: POV: poverty; GRDP: gross regional domestic product; FD: fiscal degree; HC: human capital; and ZK: Zakat.

Analysis of Gross Regional Domestic Product (GRDP) data for Aceh Province from 2010 to 2022 reveals several key insights. The average GRDP was IDR 5,454.116 billion, with the highest value recorded at IDR 38,489.98 billion and the lowest at IDR 745.860 billion. The data distribution appeared relatively even, as evidenced by the average value exceeding the standard deviation (5454.116 > 5293.441). During this period, 61.87% (185 observations) of the 23 city districts had GRDP values below the provincial average, whereas 38.13% (114 observations) were above average. This disparity indicates that many city districts with a GRDP are substantially lower than the provincial mean. Regarding fiscal degree, the average was 75.38%, with Subulussalam recording the highest at 95.30% in 2010 and North Aceh the lowest at 50.88% in 2016. The standard deviation of 12.87 is lower than the mean, suggesting minimal data variation. Of the observations, 51.84% (155 data points) showed fiscal dependence levels below the provincial average, whereas 48.16% (144 data points) were above. Human capital averaged 69.07 points, ranging from a maximum of 86.28 to a minimum of 58.97 points. Among the observations, 52.51% (157 data points) had human capital values below the national average, whereas 47.49% (142 data points) were above the national average. This distribution highlights the need for more equitable human capital development across regions. The low standard deviation of 5.09 indicates minimal variation in human capital data. Zakat distribution in Aceh Province from 2010 to 2022 averaged an IDR of 7,565.234 million. The highest distribution was recorded in Banda Aceh in 2021 at IDR 112,817 million, whereas the lowest was IDR 96 million. The standard deviation (11.878), which exceeds the mean (7.565), suggests significant data variability. Notably, 73.58% (220 observations) of the zakat distributions were below the provincial average, while 26.42% (79 observations) were above, indicating a considerable disparity in zakat distribution across the region.

3.1. Estimation Result using Panel Data Model

Panel regression analysis necessitates the estimation of three distinct models: the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). These models serve as the foundation for conducting the Chow, Hausman, and Lagrange Multiplier (LM) tests. The outcomes of these tests determine the selection of a single model for further analysis of the research findings. The subsequent table presents the estimation results for the CEM, FEM, and REM across Models I, II, III and IV.

Table 2. Result of Estimation of Panel Data Regression

Model	Variable(s)	CEM		FEM		REM	
		Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
Model 1 (POV)	C	3,054,334	0,0000	2,698,007	0,0000	2,465,977	0,0000
	FD	0,038628	0,0248	0,041883	0,0000	0,047921	0,0000
	HC	-0,229242	0,0000	-0,183995	0,0000	-0,156577	0,0000
	ZKT	-0,0000498	0,0090	-2.44E-05	0,0009	-2.82E-05	0,0013
	R-Squared	0,157865		0,904206		0,311064	
	F-Statistic	1,843,341		1,030,743		4,439,882	
	Prob(F-Satitistis)	0,000000		0,000000		0,000000	
Model 2 (GRDP)	C	-2,441,407	0,5972	3,976,720	0,0000	4,416,409	0,1085
	FD	-7,010,982	0,7596	-5,002,889	0,0012	2,654,724	0,7979
	HC	1,103,364	0,0633	2,485,521	0,0001	1,276,243	0,7174
	ZKT	0,106045	0,0000	0,018189	0,0000	-0,005819	0,6403
	R-Squared	0,086043		0,968335		0,001117	
	F-Statistic	9,257,388		3,339,423		0,109924	
	Prob(F-Satitistis)	0,000007		0,000000		0,954263	

Model 3 (POV)	C	1,893,415	0,0000	1,774,739	0,0000	1,789,695	0,0000
	GRDP	-0,00031	0,0000	-0,0000925	0,0685	-0,000120	0,0127
	R-Squared	0,158371		0,803007		0,020582	
	F-Statistic	5,588,692		487,386		6,241,365	
	Prob(F-Satitistis)	0,000000		0,00000		0,013021	
Model 4 (POV)	C	2,991,988	0,0000	283,926	0,0000	252,555	0,0000
	FD	0,036838	0,0231	0,040982	0,0000	0,048231	0,0000
	HC	-0,201065	0,0000	-0,192159	0,0000	-0,155784	0,0000
	ZKT	-2.28E-05	0,2163	-0.000026	0,0004	-2.93E-05	0,0007
	GRDP	-0,000255	0,0000	-0,000141	0,0020	-0,000122	0,0024
	R-Squared	0,256019		0,904892		0,330360	
	F-Statistic	2,529,290		9,953,544		3,626,040	
	Prob(F-Satitistis)	0,000000		0,000000		0,000000	

3.2. Panel Data Regression Selection

The empirical analysis to identify the optimal model yielded the following results. The Random Effects Model (REM) was the most suitable for elucidating the impact of fiscal level, human capital, and Zakat on poverty in Aceh Province (Model I). Conversely, the Fixed Effects Model (FEM) emerged as the preferred approach for examining the influence of fiscal level, human capital, and Zakat on the Gross Regional Domestic Product (GRDP) in Aceh Province (Model II). For Model III, which investigated the effect of GRDP on poverty, the Random Effects Model (REM) was again found to be the most appropriate. Finally, the Random Effects Model (REM) was selected as the optimal model for analyzing the combined impact of fiscal level, human capital, Zakat, and GRDP on poverty in Aceh Province (Model IV).

Table 3. Result of Panel Data Model Testing

Model	Variable(s)	Coefficient	Std. Error	t-statistic	Prob.
Model 1 (POV)	C	24,65977	1,996404	12,35209	0,0000
	FD	0,047921	0,007200	6,655397	0,0000
	HC	-0,156577	0,024668	-6,347428	0,0000
	ZKT	-0,000028	0,000008	-3,257813	0,0013
	R-Squared	0,311064		F-Statistic	44,398
	Adj. R-Squared	0,304058		Prob.	0,0000
Model 2 (GRDP)	C	3976,720	489,7045	8,120651	0,0000
	FD	-5,00288	1,524198	-3,282309	0,0012
	HC	24,85521	6,372489	3,900393	0,0001
	ZKT	0,018189	0,003454	5,265622	0,0000
	R-Squared	0,968335		F-Statistic	333,94
	Adj. R-Squared	0,965435		Prob.	0,0000
Model 3 (POV)	C	17,89695	0,746201	23,98407	0,0000
	GRDP	-0,000120	0,000047	-2,505872	0,0127
	R-Squared	0,020582		F-Statistic	6,2413
	Adj. R-Squared	0,017284		Prob.	0,0130
Model 4 (POV)	C	25,25550	1,964607	12,85524	0,0000
	FD	0,048231	0,007126	6,768016	0,0000
	HC	-0,155784	0,024392	-6,386791	0,0000
	ZKT	-0,000029	0,000008	-3,412638	0,0007
	GRDP	-0,000122	0,000040	-3,056207	0,0024
	R-Squared	0,330360		F-Statistic	36,260
	Adj. R-Squared	0,321249		Prob.	0,0000

The analysis of four econometric models reveals diverse relationships between fiscal level, human capital, Zakat, Gross Regional Domestic Product (GRDP), and poverty in Aceh Province. Model I demonstrates that fiscal levels significantly increase poverty ($p < 0.01$), while human capital and Zakat significantly reduce poverty ($p < 0.01$ and $p <$

0.05, respectively). Specifically, a one-point increase in human capital decreases poverty by 0.1566%, and a one-million IDR increase in Zakat reduces poverty by 0.0000282%. Model II indicates that fiscal level negatively impacts GRDP ($p < 0.05$), whereas human capital and Zakat positively influence it ($p < 0.01$ both). A one-point increase in human capital raises GRDP by 24.855 billion IDR and a one million IDR increase in Zakat elevates GRDP by 0.0181 billion IDR. Model III reveals a significant negative relationship between GRDP and poverty ($p < 0.05$), with a one billion IDR increase in GRDP reducing poverty by 0.00012%. Model IV corroborates the findings of model I regarding fiscal levels, human capital, and Zakat's effects on poverty. Additionally, it confirms the negative impact of GRDP on poverty ($p < 0.05$), with a one billion IDR increase in GRDP decreasing poverty by 0.000122%.

3.3. Classic Assumption Testing

In this study, the classical assumption test examined normality and multicollinearity. Given the use of panel data, not all classical assumption tests are deemed necessary. Models I, II, III, and IV normality tests were performed using the Jarque-Bera method. The probability values for Models I, III, and IV exceeded 0.05, indicating that the residuals in these models followed a normal distribution, thus satisfying the normality assumption. However, it should be noted that the normality test results for Model II are not explicitly mentioned..

Table 4. Result of Normality Testing

Test Statistics	Model(s)			
	Model I	Model II	Model III	Model IV
Jarque Berra	3.3161	2434.5230	4.4706	4.5287
Probability	0.1905	0.0000	0.1069	0,10389

Model II shows a probability value below 0.05, namely 0.0000, which indicates a normality problem. However, because this research uses more than 100 data points, it can be said that all data are normally distributed following the assumptions of the Central Limit Theorem. This theory states that if the number of observations exceeds 100, a normality test does not need to be carried out (Gujarati, 2006; Hernandez, 2021). Research with data from more than 100 observations is known to be free from data normality problems. A multicollinearity test was performed to assess whether there was a strong relationship between the independent variables used in the study. Table 5 shows the correlation matrix between the independent variables of this research, namely fiscal level, human capital, Zakat, and GRDP. The results of testing the data's multicollinearity showed no multicollinearity problems among the independent variables in this study. This was shown by the correlation coefficient value, which was less than 0.90. Thus, it can be inferred that there was no multicollinearity problem in this study.

Table 5. Result of Multicollinearity Testing

Variable(s)	FD	HC	ZKT	GRDP
FD	1.0000000	-0.159286032	-0.152532505	-0.071608843
HC	-0.159286032	1.000000	0.254110764	0.172548445
ZKT	-0.152532505	0.254110764	1.0000000	0.272679089
GRDP	-0.071608843	0.172548445	0.272679089	1.0000000

3.4. Sobel Analysis

The study model aims to examine the impact of fiscal levels, human capital, and Zakat on poverty through Gross Regional Domestic Product (GRDP). In order to investigate whether GRDP mediates the influence of these factors on poverty, this study employs path analysis to identify and evaluate the direct and indirect relationships among the variables. A path model is constructed to elucidate these relationships. The Sobel test is a statistical method used to assess the significance of GRDP's mediating role between fiscal levels, human capital, Zakat, and poverty. Figure 1 illustrates the path analysis and summarizes the Sobel test results, depicting the mediated influence of fiscal level, human capital, and Zakat on poverty through GRDP. The figure employs different line styles to represent various relationships: black lines indicate the direct effects of fiscal level, human capital, and Zakat on GRDP; red lines show the direct effects of these factors and GRDP on poverty; and blue dotted lines represent the indirect effects or mediating role of GRDP in the relationship between fiscal level, human capital, Zakat, and poverty.

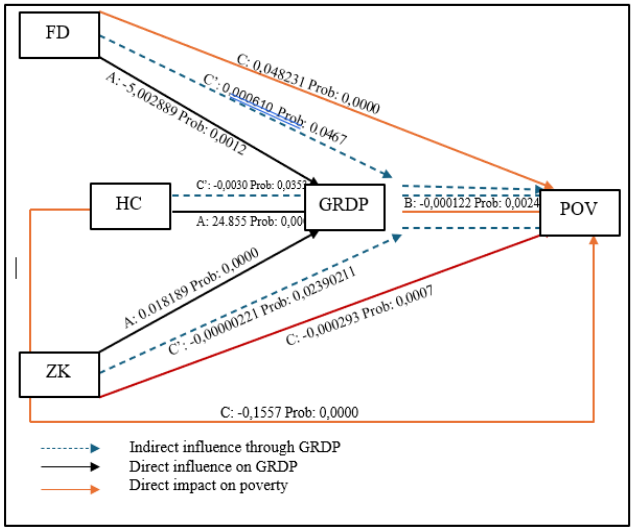

Figure 1. Result of Mediation Analysis using Sobel Test.

The Sobel test examined the potential mediating role of Gross Regional Domestic Product (GRDP) in the relationship between fiscal level and poverty in Aceh Province. The results revealed partial mediation by GRDP, as evidenced by the statistically significant indirect effect (p = 0.0467, < 0.05) at the 5% confidence level. This finding suggests that fiscal level can directly and indirectly influence poverty. Similarly, the Sobel test was employed to investigate the mediating effect of GRDP on the relationship between human capital and poverty in the Aceh Province. The results demonstrate both direct and indirect influences of human capital on poverty, with a statistically significant indirect effect (p = 0.0353 < 0.05) at the 5% confidence level. This indicates partial mediation by GRDP in the influence of human capital on poverty. Furthermore, the Sobel test was used to assess the mediating role of GRDP in the relationship between Zakat and poverty in the Aceh Province. The results showed a significant indirect effect (p = 0.035 < 0.05), confirming partial mediation by GRDP. This finding suggests that Zakat can, directly and indirectly, affect poverty through GRDP.

Table 6. Result of Mediation Analysis

Path Analysis	Coefficient	t-statistics	Decision
FD → GRDP → POV	0.0467	1.9888	Significant
HC → GRDP → POV	0.035	-2.10476	Significant
ZKT → GRDP → POV	0.023	-2.25869	Significant

4. Discussion

Fiscal decentralization policies have a complex relationship with poverty reduction. While these policies aim to mitigate developmental disparities and alleviate poverty, research has shown mixed results. In Aceh Province, a positive correlation between fiscal decentralization and poverty rates has been observed, potentially because of inefficient fund allocation and policies that are not sufficiently pro-poor. This finding aligns with those of Lustig et al. (2023) and Sepulveda and Martinez-Vazquez (2011), who indicate that fiscal policies and decentralization can lead to increased poverty. Sanogo (2019) further emphasizes the ongoing debate surrounding the effectiveness of fiscal decentralization in poverty reduction. The impact of fiscal decentralization on Gross Regional Domestic Product (GRDP) in Aceh Province was negative. This outcome contrasts with Kusuma and Anwar (2024), who report that fiscal dependence enhances regional economies. However, this is supported by Bushashe and Bayiley (2023), who discovered a statistically significant negative effect of fiscal decentralization on regional economic growth in Ethiopia.

Yang (2016) suggests that while provinces may benefit from appropriate fiscal decentralization of expenditure, excessive decentralization can lead to negative outcomes. Human capital quality has been shown to influence the GRDP in Aceh positively. Improvements in education and health services can enhance individual capacity, particularly within the workforce, and lead to increased economic activity. This finding is consistent with those of Islam (2020), Junaidi et al. (2023), and Fitriady et al. (2022), which demonstrate the positive impact of human capital indicators on per capita income and GRDP in Indonesia. Zakat emerged as a potential contributor to Aceh's societal welfare and economic growth. Its positive effect on GRDP suggests effective management and distribution with the established

regulations. This aligns with the research by Ben-Jedidia and Guerbouj (2021), which demonstrates Zakat's ability to stimulate economic growth through consumption and investment activities.

Research indicates that increasing the GRDP can reduce poverty, particularly when pro-poor growth. This finding is supported by studies by Dahliah and Nirwana (2021), Panjawa and Triyanto (2020), and Garza-Rodriguez (2018), which show that regional or national income growth can contribute to poverty alleviation. This study reveals that GRDP partially mediates the effects of fiscal decentralization, human capital, and Zakat on poverty in Aceh Province. This suggests that these factors directly and indirectly influence poverty through their impact on GRDP. The complex interplay between these variables underscores the need for comprehensive and well-targeted policies to address poverty effectively and promote sustainable economic growth in the region.

5. Conclusions

The panel data regression and path analysis yielded several significant findings regarding the economic dynamics in Aceh Province. Firstly, fiscal status demonstrated a notable negative impact on the Gross Regional Domestic Product (GRDP), while human capital and Zakat exhibited significant positive effects. The increase in human capital stimulated economic activity and GRDP growth, with Zakat similarly contributing to GRDP expansion. Secondly, fiscal levels showed a significant positive correlation with poverty rates in the province. In contrast, human capital, Zakat, and GRDP all negatively affected poverty levels. Thirdly, the GRDP significantly negatively influenced poverty in Aceh Province. Lastly, the research revealed partial mediation effects, with GRDP mediating the relationships between fiscal levels, human capital, and Zakat on poverty. These findings provide valuable insights into the complex interplay of economic factors affecting growth and poverty in Aceh Province.

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References

Adeleye, B. N., Gershon, O., Ogundipe, A., Owolabi, O., Ogunrinola, I., & Adediran, O. (2020). Comparative investigation of the growth-poverty-inequality trilemma in Sub-Saharan Africa and Latin American and Caribbean Countries. *Heliyon*, *6*(12). https://doi.org/10.1016/j.heliyon.2020.e05631

Aimon, H. (2012). Produktivitas, Investasi Sumber Daya Manusia, Investasi Fisik, Kesempatan Kerja terhadap Kemiskinan dan Pertumbuhan Ekonomi di Indonesia. *Jurnal Kajian Ekonomi*, *1*(1), 209–218.

Arifin, N., & Hendriyani, Y. (2022). PDRB, IPM, dan Kemiskinan di Indonesia. *Finansha: Journal of Sharia Financial Management*, *3*(2), 87–103. https://doi.org/10.15575/fjsfm.v3i2.20947

Arwani, A., Salenussa, S., Widyawati, N., Rahayu, I., Faiz, M. F., Cakranegara, P. A., Aziz, A., & Andiyan, A. (2022). The Development of Economic Potential of People in Pandemic through Earning Zakat Distribution. *Journal of Profess. Bus. Review. | São Paulo*, *7*(2), 1–26. https://doi.org/10.26668/businessreview/2022.v7i2.0414

Awalu Pasholihah, F., & Anwar, A. (2023). Desentralisasi fiskal dan kemiskinan regional di Jawa Timur. *Jurnal Kebijakan Ekonomi Dan Keuangan*, 98–106. https://doi.org/10.20885/jkek.vol2.iss1.art12

Baskaran, T., & Feld, L. P. (2013). Fiscal Decentralization and Economic Growth in OECD Countries: Is There a Relationship? *Public Finance Review*, *41*(4), 421–445. https://doi.org/10.1177/1091142112463726

Ben Jedidia, K., & Guerbouj, K. (2021). Effects of Zakat on the economic growth in selected Islamic countries: empirical evidence. *International Journal of Development Issues*, *20*(1), 126–142. https://doi.org/10.1108/IJDI-05-2020-0100

Bushashe, M. A., & Bayiley, Y. T. (2023). The effect of fiscal decentralization on economic growth in sub-national governments of Ethiopia: A two-step system general methods of moments (GMM) approach. *Public and Municipal Finance*, *12*(2), 32–42. https://doi.org/10.21511/pmf.12(2).2023.03

Dahliah, D., & Nirwana Nur, A. (2021). The Influence of Unemployment, Human Development Index and Gross Domestic Product on Poverty level. *Golden Ratio of Social Science and Education*, *1*(2), 95–108. https://doi.org/10.52970/grsse.v1i2.84

Davoodi, H., & Zou, H.-F. (1998). Fiscal Decentralization and Economic Growth: A Cross-Country Study. *Journal of Urban Economics*, *43*, 244–257.

Fitriady, A., Silvia, V., & Suriani, S. (2022). The Impact of Macroeconomic Variables on the Real Economic Growth in Indonesia. *International Journal of Global Optimization and Its Application*, *1*(2), 70–79. https://doi.org/10.56225/ijgoia.v1i2.16

Garza-Rodriguez, J. (2018). Poverty and economic growth in Mexico. *Social Sciences*, *7*(10). https://doi.org/10.3390/socsci7100183

Hafizd, A., Anis, A., & Triani, M. (2018). Analisis Faktor Penyebab Kemiskinan di Kabupaten Kerinci dari Dimensi Kultural. *Jurnal EcoGen*, *1*(3), 503–510.

Islam, M. S. (2020). Human Capital and Per Capita Income Linkage in South Asia: A Heterogeneous Dynamic Panel Analysis. *Journal of the Knowledge Economy*, *11*(4), 1614–1629. https://doi.org/10.1007/s13132-020-00637-1

Jacobus, E. H., Kindangen, P., & Walewangko, E. N. (2018). Analisis Faktor-faktor yang Mempengaruhi Kemiskinan Rumah Tangga di Sulawesi Utara. *Jurnal Pembanguan Ekonomi Dan Keuangan Daerah*, *19*(3).

Junaidi, Silvia, V., & Abrar, M. (2023). The Effect of Incremental Capital Output Ratio (ICOR), Labor Force Participation Rate (TPAK) and Index Human Development (IPM) Against Economic Growth in Indonesia. *International Journal of Social Science and Human Research*. https://doi.org/10.47191/ijsshr/v6-i8-27

Kusuma, A. F., & Anwar, A. (2024). Analisis ketergantungan fiskal daerah dan pertumbuhan ekonomi di Jawa Tengah. *Jurnal Kebijakan Ekonomi Dan Keuangan*, 223–233. https://doi.org/10.20885/jkek.vol2.iss2.art14

Lukis Panjawa, J., & Triyanto, J. (2020). The Role of Human Development and Decentralization toward Poverty Through Economic Growth. *Gorontalo Development Review*, *3*(1), 39–47.

Lustig, N., Pabon, V. M., & Pessino, C. (2023). Fiscal Policy, Income Redistribution, and Poverty Reduction in Latin America. *Inter-American Development Bank*. http://www.iadb.org

Mahfuzha, A., Zakia Rizki, C., Sapha, D., Jamal, A., & Weri. (2018). Is Zakat Important in Reducing Poverty? *Nces in Social Science, Education and Humanities Research*, *292*, 558–562.

Maulida, S., & Silvia, V. (2016). Indeks Pembangunan Manusia Pasca Pemekaran pada Enam Kabupaten di Provinsi Aceh. *JIM) Ekonomi Pembangunan Fakultas Ekonomi Dan Bisnis Unsyiah*, *1*(2), 389–399.

Meier, G. M., Rauch, J. E., & Oxford, N. Y. (2000). *Leading Issues in Economic Development*.

Mustika, F. N., Setyowati, E., & Alam, A. (2019). Analysis of Effect of ZIS (Zakat, Infaq, And Shadaqah), Regional Domestic Products of Bruto, Regional Minimum Wage and Inflation on Levels Poverty in Indonesia 2012-2016. *Journal of Islamic Economic Laws*, *2*(2), 193–211.

Mustika, M. D. S. (2013). Analisis Strategi Peningkatan Sumber Daya Manusia dalam Upaya Pengentasan Kemiskinan di Kecamatan Nusa Penida. *Jurnal Buletin Studi Ekonomi*, *18*(2), 98–106.

Rahman, M. A., Sani, N. S., Hamdan, R., Othman, Z. A., & Bakar, A. A. (2021). A clustering approach to identify multidimensional poverty indicators for the bottom 40 percent group. *PLoS ONE*, *16*(8 August). https://doi.org/10.1371/journal.pone.0255312

Ringga, E. S., & Silvia, V. (2024). The Nexus Between Democracy, Human Development, and Economic Growth: A Provincial Analysis. *Grimsa Journal of Business and Economics Studies*, *1*(1), 32–42. https://doi.org/10.61975/gjbes.v1i1.20

Sanogo, T. (2019). Does fiscal decentralization enhance citizens' access to public services and reduce poverty? Evidence from Côte d'Ivoire municipalities in a conflict setting. *World Development*, *113*, 204–221. https://doi.org/10.1016/j.worlddev.2018.09.008

Sari, N., Harahap, I., & Tambunan, K. (2023). Pengaruh Desentralisasi Fiskal dan Tingkat Kemiskinan terhadap Pertumbuhan Ekonomi pada Provinsi Sumatera Utara. *Transformasi Manageria Journal of Islamic Education Management*, *3*(2), 586. https://doi.org/10.47476/manageria.v3i2.3907

Sembiring, F., Tarmizi, T., & Rujiman, R. (2020). Analisis Pengaruh Pertumbuhan Ekonomi, IPM, Pengangguran Terbuka dan Angkatan Kerja Terhadap Kemiskinan di Sumatera Utara. *Serambi Engineering*, *5*(2), 974–984.

Sepulveda, C. F., & Martinez-Vazquez, J. (2011). The consequences of fiscal decentralization on poverty and income equality. *Environment and Planning C: Government and Policy*, *29*(2), 321–343. https://doi.org/10.1068/c1033r

Silvia, V. (2020). *Statistika Deskriptif*. Andi.

Szabo, S. (2016). *The impact of fiscal decentralization on local economic growth. The case of Romania*.

Todaro, M. P., & Smith, S. C. (2012). *Economic Development* (11th ed.). Addison-Wesley.

Yang, Z. (2016). Tax reform, fiscal decentralization, and regional economic growth: New evidence from China. *Economic Modelling*, *59*, 520–528. https://doi.org/10.1016/j.econmod.2016.07.020

Zheng, M., Li, X., Qin, Z., & Sohail, M. T. (2023). Examining the Impact of Fiscal Resources on Anti-Poverty Expenditure: Evidence from China. *Sustainability (Switzerland)*, *15*(5). https://doi.org/10.3390/su15054371