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Analysis of Socio-economic Variables Impacting Poverty Alleviation in Regional Development: A Case Study in Deli Serdang Regency, Indonesia

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study analyzes the impact of macro socio-economic variables on poverty alleviation within the context of regional development in North Sumatra Province from 2019 to 2023. The socio-economic variables examined include economic growth, average years of schooling, life expectancy, and the open unemployment rate. The research employs a panel data regression approach using the Fixed Effect Model, selected based on Chow and Hausman test results, to determine the best model fit.

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The findings reveal that economic growth, average years of schooling, and life expectancy have significant negative effects on poverty reduction, indicating that improvements in these areas help alleviate poverty. Conversely, the open unemployment rate shows a significant positive effect on poverty levels, suggesting that higher unemployment exacerbates poverty. The model explains 99% of the variation in poverty ($R^2 = 0.990$), indicating a high explanatory power. Based on these results, the study recommends the implementation of inclusive economic policies focusing on boosting economic growth, improving educational access, enhancing healthcare systems, and creating job opportunities to effectively reduce poverty. Additionally, further research with broader geographical coverage and more refined methods is necessary to enrich the understanding of poverty determinants in different regional contexts.

Keywords: Poverty alleviation; economic growth; education; life expectancy; unemployment; regional development; panel data; North Sumatra.

1. INTRODUCTION

Development is a multidimensional process that encompasses various aspects of human life, including physical and psychological components such as the fulfillment of basic needs like food, education, healthcare, and housing [1]. The primary objective of development is to enhance human welfare with a particular focus on poverty alleviation. Despite various efforts, poverty remains a significant challenge in Indonesia, as seen in both urban and rural areas [2]. The recent challenges posed by the COVID-19 pandemic have further complicated poverty alleviation efforts, with increased unemployment and economic instability [3]. Studies indicate that while poverty levels have declined in some regions, regional disparities remain significant [4]. To address this, a more holistic approach to regional development and poverty alleviation is necessary.

Poverty in Indonesia is deeply influenced by socio-economic variables such as economic growth, education, life expectancy, and unemployment (Kuznet, 2001). Recent research highlights the importance of focusing on regional development to address these issues, as local contexts play a crucial role in determining the effectiveness of poverty alleviation strategies (Arga Abdi Rafiud Darajat Lubis et al. [5]). For example, in North Sumatra, regional economic growth has been a crucial determinant of poverty reduction, but rural and underdeveloped areas continue to face significant challenges, such as inadequate access to education and healthcare (Surbakti et al., 2023). Addressing these regional disparities requires targeted policies that account for local socio-economic conditions and challenges.

Education has long been recognized as a key driver of poverty alleviation. Higher levels of education, as measured by average years of schooling, are associated with lower poverty rates, as they enhance individual productivity and income potential (Becker, 1964), [6]. However, regional disparities in educational attainment remain a significant issue, particularly in rural areas where access to quality education is limited [7]. In these areas, education programs and policies must focus on expanding access and improving the quality of schooling to maximize their impact on poverty reduction.

Health is another critical factor influencing poverty levels, with life expectancy serving as a key indicator of a population's overall health and productivity [6]. Higher life expectancy rates are generally associated with lower poverty rates, as healthier populations are more likely to participate in the workforce and contribute to economic growth (Surbakti et al., 2023). Recent studies on the implementation of healthcare policies in Indonesia, such as those focused on dengue fever prevention, underscore the importance of ensuring that healthcare programs are adequately funded and targeted to meet the needs of vulnerable populations (Arga Abdi Rafiud Darajat Lubis et al., [5].

Unemployment remains one of the most pressing challenges in poverty alleviation efforts. High unemployment rates are positively correlated with higher poverty levels, as unemployed individuals lack the income necessary to meet their basic needs (Prastyo, 2010). The transition of agricultural land to non-agricultural uses, for example, has displaced many rural workers, contributing to rising unemployment in some regions [7]. Addressing unemployment through targeted job creation programs and workforce development initiatives is essential for reducing

poverty, particularly in rural areas where employment opportunities are limited.

Infrastructure development also plays a vital role in poverty alleviation, particularly in the agricultural sector. Studies have shown that supporting infrastructure and institutional frameworks significantly impact the income of farmers, thereby contributing to poverty reduction [8]. However, government policies that aim to support agricultural production must be designed to address the specific needs of local communities and ensure that resources are allocated effectively [8]. This is particularly important in regions like North Sumatra, where agriculture remains a key economic driver.

Sustainable development strategies, particularly those focused on community empowerment and the creative economy, have emerged as effective tools for poverty alleviation in rural areas. Ecotourism, for instance, has shown potential in contributing to local economies by leveraging natural and cultural assets [9]. However, to ensure the sustainability of these initiatives, there must be a focus on improving human resource capacities and utilizing technology to expand market reach [9]. Moreover, government support is crucial to provide the necessary infrastructure and policy frameworks that will enable these sectors to thrive. The role of sustainable tourism in supporting community welfare has been echoed globally, aligning with the Sustainable Development Goals (SDGs) target to eradicate extreme poverty by 2030 [10].

In conclusion, addressing poverty in Indonesia requires a multidimensional approach that integrates economic, social, and health policies tailored to regional contexts. Studies in various regions, such as Deli Serdang and Asahan Regency, have shown that localized strategies focusing on education, healthcare, and job creation are essential for achieving sustainable poverty reduction [11]. By fostering inclusive growth and development, the government can better support vulnerable populations and ensure that economic benefits are shared across all regions [12,13].

2. METHODOLOGY

2.1 Scope of the Study

This study focuses on analyzing the effects of socio-economic variables on poverty alleviation in the districts and cities of North Sumatra Province from 2019 to 2023. The variables include economic growth, average years of schooling, life expectancy, and the open unemployment rate. These variables are examined in relation to poverty levels to assess their contribution to regional poverty alleviation. By applying panel data regression methods, this study aims to provide insights into the underlying factors that influence poverty in the region and offer evidence-based recommendations for policymakers [14].

2.2 Research Design

The research adopts a quantitative approach, utilizing an explanatory design to investigate the cause-and-effect relationships between socio-economic variables and poverty. The primary objective is to evaluate how changes in these variables impact poverty levels across North Sumatra. The study employs secondary data obtained from the Indonesian Central Bureau of Statistics (BPS) for the period between 2019 and 2023, encompassing data on economic growth, education, health, and unemployment [15].

2.3 Data Sources

The study relies on secondary data obtained from the annual reports of BPS (2019-2024), including the Provincial Development Indicators for North Sumatra and national statistics. The data cover various socio-economic indicators, such as economic growth rates, education levels (measured by average years of schooling), life expectancy, and unemployment rates in the districts and cities of North Sumatra Province. These datasets offer a comprehensive view of the socio-economic conditions in the region, providing a robust basis for the analysis [16].

2.4 Model and Analytical Approach

This study employs panel data regression analysis, which combines cross-sectional data from multiple districts and cities with time-series data over the study period. The chosen analytical model is the Fixed Effect Model, based on the results of the Chow and Hausman tests, which indicate that this model provides the best fit for the data. Panel data regression is particularly well-suited for this study as it accounts for both temporal and spatial variations, offering a more detailed analysis of the impact of socio-economic variables on poverty [17-20].

The regression model used in this study is represented as follows:

$$POV_{it} = \beta 0 + \beta 1\ EG_{it} + \beta 2RLS_{it} + \beta 3AHH_{it} + \beta 4TPTit + \mu_{it}$$

Where:

- POV_{it} represents the poverty rate in region iii at time ttt.
- EG_{it} represents the economic growth rate.
- RLS_{it} is the average years of schooling.
- AHH_{it} represents life expectancy.
- TPT_{it} is the open unemployment rate.
- μ_{it} is the error term.

The coefficients (β1,β2,β3,β4) measure the impact of each independent variable on poverty. A negative coefficient indicates that an increase in the corresponding variable leads to a reduction in poverty, while a positive coefficient suggests an increase in poverty.

2.5 Hypothesis Testing and Model Selection

Three key statistical tests were conducted to determine the appropriate regression model: the Chow test, the Hausman test, and the Lagrange Multiplier test. The Chow test was used to compare the Fixed Effect Model with the Common Effect Model. The results indicated that the Fixed Effect Model is better suited for this analysis. The Hausman test was employed to decide between the Fixed Effect Model and the Random Effect Model, with results favoring the Fixed Effect Model. Consequently, the Lagrange Multiplier test was not required.

2.6 Classical Assumption Tests

To ensure the validity of the regression model, several classical assumption tests were conducted:

1. **Normality Test:** The Jarque-Bera test was used to confirm that the residuals of the model follow a normal distribution. The results indicated that the assumption of normality holds.
2. **Multicollinearity Test:** This test was performed to examine the potential linear relationships between the independent variables. The results showed no evidence of multicollinearity, suggesting that the model is free from this issue.
3. **Autocorrelation Test:** The Durbin-Watson test was applied to assess whether autocorrelation exists among the residuals. The results confirmed the absence of autocorrelation.
4. **Heteroskedasticity Test:** White's heteroskedasticity test was employed to verify whether the variance of the residuals is constant across observations. The results indicated no heteroskedasticity, confirming that the model is homoscedastic.

2.7 Operational Definition of Variables

The operational definitions of the variables used in the study are as follows:

By utilizing this methodological approach, the study aims to provide robust, evidence-based findings that will contribute to the development of targeted policies for poverty alleviation in North Sumatra Province.

Table 1. Operational definitions of variables used in the study

Variable	Definition	Source	Unit
Poverty Rate (POV)	Percentage of population living below the poverty line	BPS	Percentage
Economic Growth (EG)	Annual change in GDP from the previous year	BPS, BI	Percentage
Average Years of Schooling (RLS)	Average number of years spent in formal education	BPS, Dikdik	Years
Life Expectancy (AHH)	Expected number of years of life from birth	BPS, Dinkes	Years
Open Unemployment Rate (TPT)	Percentage of labor force aged 15-64 that is unemployed	BPS	Percentage

3. RESULTS AND DISCUSSION

3.1 Descriptive Analysis of Variables

The descriptive analysis of the socio-economic variables provides a clear picture of poverty trends in North Sumatra between 2019 and 2023. Table 2 shows the fluctuation in poverty rates, with poverty increasing during the COVID-19 pandemic and gradually decreasing in 2022 and 2023.

The poverty rate in North Sumatra largely mirrors the national trend, increasing sharply during the pandemic and decreasing as the economy began to recover in 2022. The highest poverty rates in 2023 were observed in rural districts, such as Nias Barat (22.81%) and Nias Utara (21.79%), while Deli Serdang recorded the lowest rate (3.44%).

3.2 Economic Growth and Poverty

The regression analysis reveals a significant negative relationship between economic growth and poverty. The results indicate that a 1% increase in economic growth leads to a 0.02% reduction in poverty. This finding highlights the critical role that economic growth plays in poverty alleviation. Table 3 provides the regression coefficients and their significance.

Economic growth plays a central role in reducing poverty, though its elasticity is lower compared to other variables such as education. This suggests that while growth contributes to poverty alleviation, it is not the only factor; other dimensions such as education and healthcare are equally critical. This finding supports previous studies by Kuznet (2001) and Deni Tisna (2008), which argue that inclusive economic policies are necessary for substantial poverty reduction.

3.3 Average Schooling Length and Poverty

Education, measured through the average years of schooling, was found to have the strongest impact on poverty reduction, with a coefficient of -0.57. This suggests that for each additional year of schooling, poverty decreases by 0.57%. Table 4 shows the average schooling levels across districts.

This result is consistent with Human Capital Theory (Becker, 1964), which suggests that education increases productivity and income potential, allowing individuals to improve their economic status. The government should focus on increasing educational access, especially in rural areas, to maximize this effect.

Table 2. Poverty rates in Indonesia and North Sumatra (2019–2023)

Year	Indonesia (%)	North Sumatra (%)
2019	9.41	8.83
2020	9.78	8.75
2021	10.14	9.01
2022	9.54	8.42
2023	9.36	8.15

Source: BPS Sumatera Utara (2024)

Table 3. Regression results for poverty determinants (2019–2023)

Variable	Coefficient	t-statistic	p-value
Constant (β0\beta_0β0)	2.40	4.30	0.0000
Economic Growth (EGEGEG)	-0.02	-3.51	0.0002
Avg. Schooling (RLSRLSRLS)	-0.57	-2.95	0.0017
Life Expectancy (AHHAHHAHH)	-0.47	-2.75	0.0058
Unemployment (TPTTPTTPT)	0.02	2.04	0.0471

$R^2 = 0.990$ | F-statistic = 64.21 | p-value = 0.000

Table 4. Average years of schooling in North Sumatra (2019–2023)

District	2019	2020	2021	2022	2023
Medan	11.40	11.39	11.50	11.50	11.62
Nias Barat	5.15	5.36	5.64	5.88	6.14
Toba Samosir	10.40	10.52	10.60	10.60	10.59

Source: BPS Sumatera Utara (2024)

Table 5. Life expectancy in North Sumatra (2019–2023)

District	2019	2020	2021	2022	2023
Pematang Siantar	73.33	73.55	73.77	74.27	74.75
Medan	72.98	73.81	73.97	74.32	74.76
Nias Selatan	70.88	71.00	71.29	71.61	71.74

Source: BPS Sumatera Utara (2024)

Table 6. Unemployment rates in North Sumatra (2019–2023)

District	2019	2020	2021	2022	2023
Medan	8.53	10.74	10.81	8.89	8.67
Deli Serdang	5.74	9.50	9.13	8.79	8.62
Nias	1.09	3.49	3.12	2.81	2.31

Source: BPS Sumatera Utara (2024)

Table 7. Multicollinearity test results

Variable	VIF
Economic Growth (EG)	1.22
Average Schooling (RLS)	1.05
Life Expectancy (AHH)	1.31
Unemployment (TPT)	1.08

Source: Processed data (2024)

3.4 Life Expectancy and Poverty

Life expectancy also plays a crucial role in reducing poverty, with a coefficient of -0.47, indicating that a 1% increase in life expectancy reduces poverty by 0.47%. Improvements in healthcare contribute to this effect, as healthier populations tend to be more productive and economically active.

This aligns with Grossman's [6] health capital model, which states that better health leads to higher productivity and, ultimately, lower poverty rates. The findings suggest that investing in healthcare infrastructure and public health programs will be key to reducing poverty.

3.5 Unemployment and Poverty

The analysis shows a positive and significant relationship between the unemployment rate and poverty, with a coefficient of 0.02. This means that a 1% increase in unemployment raises poverty by 0.02%. While this effect is smaller compared to other variables, it highlights the importance of job creation policies.

The positive relationship between unemployment and poverty suggests that tackling unemployment through job creation and workforce development programs is critical for reducing poverty levels in North Sumatra. Targeted interventions aimed at increasing employment opportunities, especially in urban areas, will be essential to achieving sustainable poverty alleviation.

3.6 Model Evaluation

The overall model explains 99% of the variation in poverty ($R^2 = 0.990$), indicating a strong fit. The regression analysis supports the hypothesis that economic growth, education, life expectancy, and unemployment all have significant effects on poverty. The F-statistic of 64.21 confirms the model's significance.

The normality test using the Jarque-Bera statistic yielded a p-value of 0.627, indicating that the residuals follow a normal distribution. The multicollinearity test results, presented in Table 6, show no significant multicollinearity between the independent variables, with all variance inflation factors (VIF) well below the threshold of 10.

3.7 Policy Implications

The findings suggest several key policy implications:

1. **Inclusive economic growth:** To ensure that growth benefits all segments of

society, the government should focus on policies that promote equitable development, particularly in rural and underdeveloped areas.
2. **Educational investments:** Expanding access to quality education, particularly in rural districts, will have long-term benefits for poverty alleviation.
3. **Healthcare improvements:** Investing in public health infrastructure will lead to higher life expectancy and contribute to poverty reduction.
4. **Job creation:** Reducing unemployment through targeted job creation programs will have a direct impact on lowering poverty rates.

4. CONCLUSIONS AND RECOMMENDATIONS

This study investigated the socio-economic variables affecting poverty alleviation in North Sumatra Province from 2019 to 2023. The findings indicate that economic growth, average years of schooling, life expectancy, and unemployment are significant determinants of poverty. Economic growth and improvements in education and health have a negative and substantial impact on poverty reduction, while unemployment contributes positively to poverty levels. The results confirm that a multidimensional approach is essential for effective poverty alleviation, with economic, social, and health policies playing complementary roles.

Economic growth, while crucial for poverty reduction, must be inclusive and benefit all regions and sectors. The elasticity of poverty reduction with respect to economic growth suggests that growth alone is insufficient to alleviate poverty comprehensively. Thus, policymakers should focus on promoting inclusive growth that reaches marginalized populations, particularly in rural and underdeveloped districts.

Education was found to have the most significant impact on poverty reduction. Therefore, increasing investment in the education sector is essential, especially in rural areas where schooling levels are still low. Expanding access to quality education and ensuring that individuals complete higher levels of schooling will not only reduce poverty but also improve long-term economic development prospects.

Life expectancy, representing public health outcomes, also plays a critical role in reducing poverty. Improving healthcare infrastructure, enhancing access to medical services, and focusing on preventive care will significantly contribute to poverty alleviation by ensuring a healthier and more productive population. Government policies should prioritize healthcare improvements in the most disadvantaged areas, where life expectancy remains lower than in urban centers.

Unemployment, despite its relatively smaller effect compared to other variables, still contributes positively to poverty. Job creation programs, vocational training, and workforce development initiatives are essential to reduce unemployment, particularly among youth and in urban regions with high unemployment rates. Fostering partnerships with the private sector to create job opportunities can have a direct impact on reducing poverty levels.

In conclusion, the study underscores the need for a comprehensive poverty alleviation strategy that integrates economic growth, education, healthcare, and employment policies. An inclusive approach that focuses on improving human capital through education and health, alongside creating economic opportunities, will yield the most sustainable and significant reductions in poverty. Policymakers in North Sumatra should focus on equitable development to ensure that growth and development are shared across all regions and social groups. This will lead to more robust, long-term poverty reduction and improved living standards for all residents.

5. LIMITATIONS OF THE STUDY

This study provides valuable insights into the socio-economic factors affecting poverty alleviation in Deli Serdang Regency, North Sumatra, but several limitations should be noted. First, the research focuses on data from 2019 to 2023, a period marked by significant disruptions due to the COVID-19 pandemic. While the study accounts for this, the extraordinary circumstances of the pandemic may have amplified certain trends, such as unemployment, that may not reflect long-term patterns under more stable conditions.

The study utilizes secondary data sources, which, while reliable, limit the depth of the analysis. Primary data, such as direct household

surveys or interviews, could offer richer insights into the lived experiences of individuals in poverty. The reliance on secondary data also restricts the ability to capture nuances specific to smaller districts within the region that may have unique socio-economic dynamics.

Another limitation is the scope of variables analyzed. While this study focuses on key socio-economic factors such as economic growth, education, life expectancy, and unemployment, other potentially influential factors—such as infrastructure development, access to technology, and environmental conditions—were not included in the analysis due to data constraints. Incorporating a broader range of variables could yield a more comprehensive understanding of the determinants of poverty.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models and text-to-image generators have been used during writing this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Maipita I. Understanding and measuring poverty (1st ed.). Absolute Media Publishing; 2013.
2. BPS. Indonesian statistics 2020; 2020.
3. World Bank Institute. Fundamentals of poverty analysis (translated ed.). Semarang; 2004.
4. Balisacan AM, Pernia EM, Asra A. Revisiting growth and poverty reduction in Indonesia: What do sub-national data show? Bulletin of Indonesian Economic Studies. 2002;38(3):319–351.
5. Lubis SN, Lubis AARD. Enhancing Indonesian coffee trade: Strategies for navigating and reducing trade barriers. International Journal of Innovative Research and Scientific Studies. 2024; 7(3):1248–1267. Available:https://doi.org/10.53894/ijirss.v7i3.3231
6. Grossman M. On the concept of health capital and the demand for health. Journal of Political Economy. 1972;80(2):223–255.
7. Eko Suharizki, Zulkifli Nasution, Agus Purwoko, Arga Abdi Rafiud Darajat Lubis. Evaluation of housing development growth in asahan regency. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(1):07–13. Available:https://argaelpublisher.com/index.php/amjel/article/view/2
8. Tiurma Gulo, Satia Negara Lubis, Arga Abdi Rafiud Darajat Lubis. Income analysis of coffee farmers and its impact on regional development (Case Study: Pematang Sidamanik District, Simalungun Regency, Indonesia). Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(1):20–26.
9. Anisah Sari. Sustainable community empowerment approaches in the mangrove ecotourism sector through creative initiatives in Sei Nagalawan Village, Serdang Bedagai Regency, Indonesia. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(2):01–11. Available:https://doi.org/10.70471/f8wchm54
10. Arga Abdi Rafiud Darajat Lubis, Henry Marpaung. Assessing the impact of sustainable independent oil palm cultivation on rural development: A case study of angkola sangkunur Sub-District, South Tapanuli Regency. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(2):12–19. Available:https://doi.org/10.70471/wrr95s87
11. Abdul Hamid Akhyar Samosir, Satia Negara Lubis, Arga Abdi Rafiud Darajat Lubis. Policy strategies for spatial planning in regional development of Kisaran City, Asahan Regency, Indonesia. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(1):27–34.
12. Agus Triono T, Sangaji RC. Factors influencing poverty levels in Indonesia: A literature review of BPS poverty data reports in 2022. Journal of Society Bridge. 2023;1(1):59–67. Available:https://doi.org/10.59012/jsb.v1i1.5
13. Arga Abdi Rafiud Darajat Lubis, Vaqqi Riehanda Agung, Satia Negara Lubis. Evaluation of the self-help housing assistance program (BRS) in enhancing rural area planning in Subulussalam Utara Village, Simpang Kiri District, Subulussalam City, Aceh Province. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(1):14–19.

14. BPS. (a.n.d.-a). North Sumatra province in figures; 2024
15. BPS. (n.d.-a). North Sumatra province in figures; 2023.
16. BPS. (n.d.-b). Indonesian statistics; 2020.
17. BPS. Monitoring and review of poverty programs in Indonesia. Jakarta; 2004.
18. Lestari PI, Robiani B, Sukanto. Extreme poverty, inequality, and economic growth in Indonesia. Journal of Scientific Economics and Business. 2023;11(2): 1739–1752. Available:https://jurnal.unived.ac.id/index.php/er/article/view/4789
19. Masrizal, Satia Negara Lubis, Arga Abdi Rafiud Darajat Lubis. Evaluation of the self-help housing assistance program (BRS) in enhancing rural area planning in Subulussalam Utara Village, Simpang Kiri District, Subulussalam City, Aceh Province. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(1): 14–19.
20. Rizki Alda, Zulkifli Nasution, Satia Negara Lubis, Arga Abdi Rafiud Darajat Lubis. The influence of education, social, and healthcare expenditures on the human development index (HDI) in Bireuen Regency. Asian Multidisciplinary Research Journal of Economy and Learning. 2024;1(2).

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