The Influence of Human Development Index on Economic Growth, Unemployment, and Poverty Reduction in Bener Meriah Regency: A Path Analysis Approach

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Abstract
This study aims to analyze the influence of the Human Development Index (HDI) on economic growth, unemployment, and poverty reduction in Bener Meriah Regency using a path analysis approach. Human development is recognized as a strategic factor in driving inclusive and sustainable economic progress, particularly in regions facing persistent socioeconomic disparities. The study utilizes secondary data obtained from the Central Bureau of Statistics (BPS) covering the period from 2015 to 2023. The results reveal that HDI has a significant and positive direct effect on economic growth and a negative effect on poverty. Additionally, HDI indirectly contributes to poverty reduction through its influence on unemployment and economic growth. These findings suggest that improving education, health, and living standards core components of HDI can serve as effective policy levers for accelerating regional development and reducing poverty. The study provides valuable implications for local governments in formulating integrated development strategies based on human-centered approaches.

Keywords: Human Development Index, Economic Growth, Unemployment, Poverty, Path Analysis, Regional Development

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Introduction

In the pursuit of inclusive and sustainable development, human development has become a strategic foundation for addressing persistent socioeconomic challenges. Human Development Index (HDI), which encapsulates life expectancy, educational attainment, and per capita income, is widely recognized as a multidimensional indicator of societal progress. Regions with higher HDI levels are generally associated with stronger economic growth and lower poverty and unemployment rates. However, in several developing areas, such as Bener Meriah Regency in Aceh Province, Indonesia, the expected synergy between human development and economic outcomes remains suboptimal. Based on data from the Central Bureau of Statistics (BPS), the Human Development Index of Bener Meriah in 2023 stood at 70.18, categorized as moderate and below the national average of 74.39. The poverty rate remains relatively high at 15.47%, compared to the national level of 9.36%, while the unemployment rate, although relatively low at 4.52%, still indicates structural labor market issues. Furthermore, the economic growth rate of Bener Meriah in 2023 reached 4.31%, slightly below the Aceh provincial average of 4.65%, reflecting limited economic momentum despite ongoing government interventions in infrastructure and agriculture.

These figures highlight a developmental paradox: despite moderate improvements in HDI over the years, poverty reduction has been slow, and economic growth remains uneven. This raises a fundamental question: to what extent does human development, as measured by HDI, influence poverty and economic growth directly and indirectly through unemployment?. Although numerous studies have examined the relationship between HDI and macroeconomic indicators, most rely on national-level data or overlook regional disparities. Moreover, previous research often treats the relationship between HDI and poverty as linear and direct, without adequately addressing the mediating role of unemployment and economic growth. This presents a research gap in the understanding of interdependent effects within local development contexts, particularly in lagging regions like Bener Meriah.Therefore, this study offers a significant contribution by applying a path analysis approach to uncover both the direct and indirect effects of HDI on poverty and economic growth. This methodology enables a nuanced examination of the causal pathways and mediating variables, providing empirical evidence relevant to subnational development policy. The study's findings are expected to enrich the theoretical framework of regional development and offer actionable insights for local governments to design more human-centered and integrated poverty alleviation strategies.

Literature Review

2.1 Human Development Index (HDI)

The Human Development Index (HDI), introduced by the United Nations Development Programme (UNDP), is a composite index measuring average achievement in three key dimensions: health (life expectancy at birth), education (mean years of schooling and expected years of schooling), and standard of living (GNI per capita). HDI provides a more comprehensive understanding of development than income-based metrics alone (UNDP, 2023). According to Todaro and Smith (2020), human development is both a means and an end of economic growth. Investments in education and health enhance labor productivity, foster innovation, and contribute to a more equitable distribution of income.

2.2 HDI and Economic Growth

Empirical studies have shown a strong and positive relationship between HDI and economic growth. Barro (2015) notes that countries with better human capital accumulation

tend to experience higher long-term growth. In a regional study, Suhariyanto et al. (2021) found that improvements in education and health outcomes significantly boost regional GDP in Indonesian provinces. However, growth does not always automatically follow human development, especially if structural constraints persist.

2.3 HDI and Poverty

Human development is crucial for poverty reduction. Higher HDI levels are associated with lower poverty incidence, as education and health improve individuals' capabilities and access to opportunities (Sen, 1999). According to Kusumawardani et al. (2020), a 1-point increase in HDI in Indonesia is statistically associated with a 0.3% decrease in poverty rate. Nevertheless, in some areas, poverty persists despite moderate HDI improvements, signaling the presence of indirect or lagged effects.

2.4 HDI and Unemployment

The relationship between HDI and unemployment is nuanced. Education and skills development may reduce unemployment in well-structured labor markets. However, in regions with limited industrial or service sector absorption capacity, even highly educated individuals may face joblessness. Budiastuti & Widodo (2022) found that in several districts in Aceh, rising education levels did not proportionately reduce unemployment due to mismatches in labor demand and supply.

2.5 Research Gap and Study Positioning

Although numerous studies have examined the effects of HDI on either economic growth or poverty, few have explored the interconnected and mediating pathways among HDI, unemployment, economic growth, and poverty at the regional level. Prior research tends to treat these variables in isolation and relies heavily on linear regression approaches. This study addresses this gap by employing path analysis, which allows for an examination of both direct and indirect effects among the variables. By focusing on Bener Meriah Regency—a region with persistent poverty and moderate HDI—this research contributes to a more contextualized understanding of development dynamics in decentralized economies.

Methods

This study adopts a quantitative explanatory research design using a causal path analysis approach to examine the direct and indirect effects of the Human Development Index (HDI) on economic growth, unemployment, and poverty in Bener Meriah Regency. Path analysis was chosen to explore not only the structural relationships among variables but also the mediating role of unemployment and economic growth in the link between HDI and poverty. The data were analyzed using path analysis, a structural statistical method that decomposes the effects of one variable on another into direct and indirect influences. The analysis was conducted using SPSS, depending on model fit considerations. The basic structural model can be expressed as:

$$EG = \beta_1(HDI) + \varepsilon_1$$
$$UMP = \beta_2(HDI) + \varepsilon_2$$
$$POV = \beta_3(HDI) + \beta_4(EG) + \beta_5(UMP) + \varepsilon_3$$

Where: β_1, β_2, β_3, β_4, β_5 = Path coefficients. ε = Error term

Result and Discussion

4.1 Path Analysis Results

Using data from 2015 to 2023 and applying path analysis with SPSS AMOS, the estimated structural model shows good fit indices (CFI = 0.985, TLI = 0.973, RMSEA = 0.048), indicating that the model is appropriate for further interpretation.

The following table summarizes the direct and indirect effects of each variable:

Table 1. Direct and Indirect Effects

Relationship	Direct Effect	Indirect Effect	Total Effect
HDI → Economic Growth	+0.62***	–	+0.62
HDI → Unemployment	–0.41**	–	–0.41
HDI → Poverty	–0.25*	–0.29	–0.54
Economic Growth → Poverty	–0.31**	–	–0.31
Unemployment → Poverty	+0.24*	–	+0.24

Note: ***p < 0.01; **p < 0.05; *p < 0.10

4.2 Interpretation of Results

The results indicate that the Human Development Index (HDI) has a significant and positive direct effect on economic growth (+0.62) and a negative direct effect on unemployment (–0.41). This aligns with existing literature (e.g., Barro, 2015; UNDP, 2023), confirming that investments in education, health, and income contribute to productivity and labor market absorption. In terms of poverty reduction, HDI exhibits both a direct negative effect (–0.25) and a stronger indirect effect (–0.29), channeled through economic growth and unemployment. These results suggest that the full contribution of human development to poverty alleviation is mediated by other macroeconomic dynamics, particularly labor absorption and productive economic activity. Economic growth has a significant negative effect on poverty (–0.31), indicating that regions experiencing higher growth tend to have lower poverty rates. Conversely, unemployment positively affects poverty (+0.24), which is expected in regions with underutilized labor markets.

The findings of this study reaffirm the central role of human development in shaping key economic outcomes. The significant positive relationship between the Human Development Index (HDI) and economic growth, along with its negative effect on unemployment and poverty, demonstrates that long-term investments in human capital such as education, health services, and income-generating capacity can generate substantial multiplier effects across the economy. However, this research offers a novel contribution by explicitly examining the mediating effects of economic growth and unemployment in the relationship between HDI and poverty. While most previous studies have analyzed the effects of HDI on poverty or growth in isolation (e.g., Suhariyanto et al., 2021; Kusumawardani et al., 2020), this study integrates these variables into a single structural framework using path analysis, enabling a more comprehensive understanding of causal pathways.

This approach addresses a clear research gap in the literature: few studies at the subnational or district level, especially in lagging regions like Bener Meriah, have examined how human development simultaneously influences multiple economic indicators, both directly and indirectly. Existing models often assume a linear, unidirectional relationship,

which risks oversimplifying the complexity of development processes in rural or semi-urban areas. Moreover, this study demonstrates that indirect effects of HDI through unemployment and economic growth can be stronger than the direct impact, particularly in relation to poverty reduction. This insight is crucial for policymakers, as it suggests that the effectiveness of human development initiatives depends heavily on the broader institutional and economic environment that enables human capital to be transformed into economic value and employment opportunities.Thus, this research not only confirms prior theoretical assumptions but also advances the empirical understanding by presenting a multidimensional, localized model of human development impact—something that has been underrepresented in the development economics literature, particularly for decentralized governance contexts like Indonesia.

Conclusion

This study investigates the influence of the Human Development Index (HDI) on economic growth, unemployment, and poverty in Bener Meriah Regency using a path analysis approach. The results confirm that HDI has a significant positive effect on economic growth and a negative effect on both unemployment and poverty. More importantly, the analysis reveals that HDI's impact on poverty is not only direct but also indirect, operating through its influence on economic growth and unemployment.

These findings emphasize the strategic role of human development as a driver of inclusive and sustainable economic transformation at the regional level. Improvements in education, health, and income do not only benefit individuals but also serve as systemic levers for reducing poverty and promoting broad-based growth.

Based on the results, several policy recommendations are proposed: Local governments should intensify programs in education and healthcare access, particularly targeting rural and disadvantaged communities to improve HDI more evenly. Economic policies should focus on labor-intensive sectors and promote entrepreneurship to reduce unemployment, especially among the educated youth. Development strategies should not treat human development and economic growth as separate agendas. Instead, HDI should be a core component of regional economic planning frameworks. Cross-sector collaboration especially between education, labor, and industry—is essential to ensure that human capital development translates into productive economic participation.

This study is limited to secondary data from 2015–2023 and focuses only on a single regency. Future research should explore similar models across multiple regions to allow comparative analysis and include qualitative dimensions of human development (e.g., social inclusion, gender equality). Additionally, future studies may consider using more complex techniques such as structural equation modeling (SEM) to capture latent constructs and feedback loops more effectively.

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