International Review of Social Sciences Research
Volume 3 Issue 3 September 2023
DOI: https://doi.org/10.53378/353012

Human Development Gaps: Evidence from Eastern Indonesia

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Abstract

The Human Development Index (HDI) in Indonesia continues to improve. However, the rate of development varies by region, most notably in eastern Indonesia. Based on our findings, it is clear that during the COVID-19 pandemic, particularly in 2020, HDI growth in Indonesia slowed, with Eastern Indonesia even experiencing negative growth. During this time, Eastern Indonesia dropped from 65.78 to 65.74, or 0.04 points, while other regions continued to increase by 0.05 to 0.06 points. Gross Regional Domestic Product (GRDP) per capita, the number of poor people, the expected length of schooling, and life expectancy are among the variables that affect HDI. Between 2012 and 2022, data about variables affecting HDI were gathered as panel data from 159 regencies/cities in 5 provinces in Eastern Indonesia. The provinces are East Nusa Tenggara, Maluku, North Maluku, Papua, and West Papua. According to the data, GRDP per capita, expected length of schooling, and life expectancy all positively affected the HDI. In contrast, the number of poor people had the opposite effect. Differences in these four elements in each of Indonesia's regions will cause HDI disparities. The study's policy implications are that the Indonesian government can emphasize equitable distribution and improve the quality of human development in eastern Indonesia.

Keywords: *Human Development Index, GRDP per capita, Poor people, Expected Length of School, Life Expectancy*

Article History:

***Received**: August 16, 2023* ***Revised**: September 2, 2023*
***Accepted**: September 3, 2023* ***Published online**: September 4, 2023*

Suggested Citation:
Siti Amalia, Agus Iwan Kesuma, Auliansyah, Yesi Aprianti & Adi Wijaya (2023). Human Development Gaps: Evidence from Eastern Indonesia. *International Review of Social Sciences Research*, 3 (3), 24-43. **https://doi.org/10.53378/353012**

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1. Introduction

The Human Development Index (HDI) is a summary measure of human development. HDI measures the average achievements in a country in three basic dimensions of human development: a long and healthy life, access to knowledge, and a decent standard of living (The World Bank, 2010). Bilbao-Ubillos (2013) refers longevity to the ability of the individuals to enjoy a long and healthy life, access to knowledge with the educational system and average life standards through purchasing power. In the element of decent living, the economic ability (purchasing power) to meet primary needs is represented by the average spending of the population per capita. According to Todaro and Smith (2014), HDI is an index measuring the national socioeconomic development, based on combining measures of education, health, and adjusted real income per capita. It is a summary indicator in comparing the well-being of countries in the world (Deb, 2015; Lind, 2019; Ranis et al., 2016). Although it is a widely-accepted measure of country's social and economic development (Dervis & Klugman, 2011; Paliova et al., 2019; Ghislandi et al., 2019; Yin et al., 2023; Perkins et al., 2021). Pinar et al. (2022) argue that there are other indicators to measure the overall construct of national well-being. For instance, Comim (2016) asserts the inclusion of capability perspective while Ghislandi et al. (2019) also include the fusion of two indicators, namely life expectancy (LE) and expected length of schooling (ELS), from the education aspect. In addition, Ibar-Alonso et al. (2019) introduced the Time Human Development Index (THDI) to include the impact of time period on national development. In Indonesia, the Central Bureau of Statistics uses life expectancy at birth to measure health factors (BPS.go.id, 2020).

There are several studies that measure the HDI in various countries. For example, Liu et al. (2023) measured the China Human Development Index (CHDI) using inequality adjustment model and DFA model to analyse the current situation of regional imbalance. Meanwhile, Tunsi and Alidrisi (2023) considered technological factor as the fourth dimension of HDI in G8 countries using Multi-Criteria Decision Making (MCDM) techniques. There are other dimensions introduced to measure HDI such as adolescent fertility rate as value-added in oil-dependent nations (Fossaceca, 2019), tourism market as composite indicator (Biagi et al., 2015), peace and happiness as component of Composite Development Index (Prakash & Garg, 2019) and HDI as predictor of life satisfaction in

Malaysia (Ngoo & Tey, 2019). However, Muluk and Wahyudi (2022) identified that in Indonesia there are limited studies on HDI in the regional and municipal levels.

Geographically, Indonesia is divided into three parts, which are western, central, and eastern as shown in figure 1 and table 1.

Figure 1

Provincial Map of Indonesia

Source: https://www.resourcefulindonesian.com/mapping-indonesia.html, 2023

Table 1

Provinces & Areas by Region

Regions		
West	**Central**	**East**
Aceh	DKI Jakarta	East Nusa Tenggara
North Sumatra	West Java	Maluku
West Sumatra	Central Java	North Maluku
Riau	Di Yogyakarta	West Papua
Jambi	East Java	Papua
South Sumatra	Banten	
Bengkulu	Bali	
Lampung	West Nusa Tenggara	
Bangka Belitung Islands	South Kalimantan	
Riau Islands	East Kalimantan	
West Kalimantan	North Kalimantan	
Central Kalimantan	North Sulawesi	
	Central Sulawesi	
	South Sulawesi	
	Southeast Sulawesi	
	Gorontalo	
	West Sulawesi	

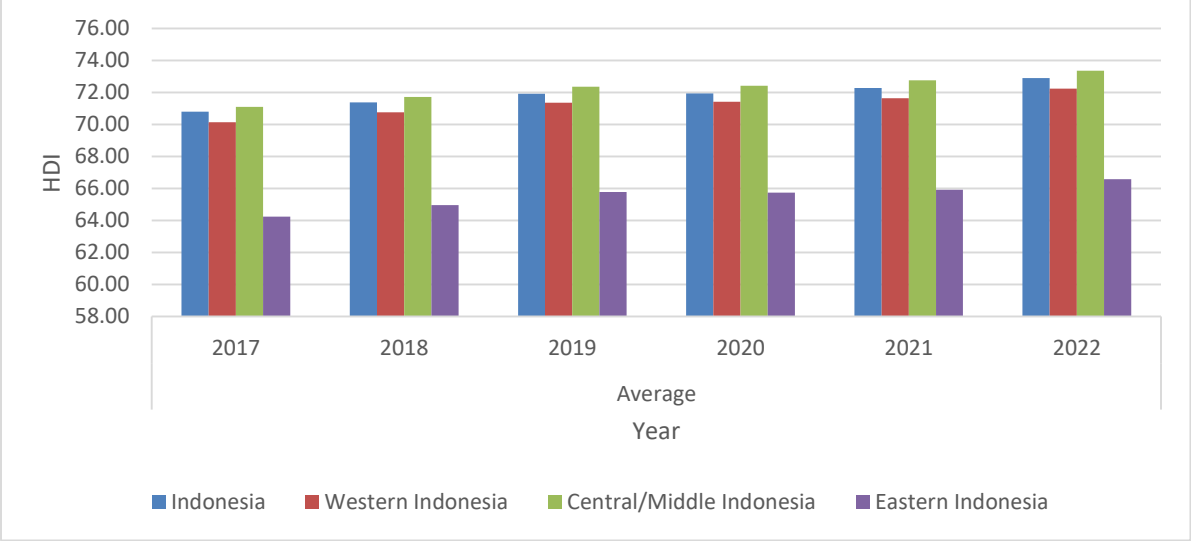
Source: Central Bureau of Statistics, 2020

Human development in Indonesia continue increased to an HDI score of 71.92 in 2019, or an increase of 0.53 points, and has grown 0.74% compared to the previous period.

In the same year, it also appears that Indonesian people meet the needs of life with an average purchasing power parity (PPP) of up to IDR 11.30 million per year, or IDR 240 thousand higher. Although HDI in Indonesia has increased in recent years, there are also prominent gaps between provinces/regions. It is undeniable that HDI, in general, is more focused on Indonesia's central and western areas. The following graph shows these phenomena of HDI development over the past six years.

Figure 2

Human Development Index in Indonesia



Source: processed data, 2023

According to the data in figure 2, the HDI in Indonesia has a significant gap. There is a tremendous disparity among the three Indonesian regions. Eastern Indonesia has a much lower HDI than the rest of Indonesia and the national average. There are allegations that factors affecting HDI's performance are GRDP per capita, poor population, literacy rate, and life expectancy. Arisman (2018), Khodabakhshi (2011), and Dasic et al. (2020) argued that developing countries such as ASEAN, Africa, and South America face slow-accelerating human development rates due to uncontrolled populations. In addition, the government, as a macroeconomic policy maker, is also overwhelmed to overcome socio-economic problems such as poverty due to population explosion. Because the government budget is so limited, it is impossible to reach every population level. Therefore, improvements in quality of life, employment, education, health insurance, and public facilities are frequently overlooked.

In the current situation, economic conditions in Indonesia, marked by GDP in 2020, have contracted by -2.07% (ZA et al., 2021). Compared to 2019, there is at least striking

change, where the 2019 period still grows at 5.02%. Covid-19 is undoubtedly the dominant factor in why the GDP growth rate in Indonesia has dived sharply (Budiono & Purba, 2023; Mishra, 2021). A decline in GDP growth during 2020 affected people's economic capability (Roy et al., 2021). The level of household consumption has been the foundation of GDP growth in Indonesia for decades. The financial condition was worsened by the addition of poor people due to job losses. Putra (2018) highlighted the correlation between HDI in Jambi Province and economic growth, poverty, and unemployment during 2011-2015. As a result, HDI is positively affected by poverty and unemployment. At the same time, the increase in economic growth can reduce HDI.

Poverty is described as a lack of economic power and a failure to provide equal treatment and fulfill basic human rights. In addition, Haughton and Khandker (2009) characterize a poor person without financial or economic means to live decently. This point of view looks at poverty from a monetary standpoint. However, poverty is also associated with some types of consumption, such as homelessness, lack of food, or bad health. The most often used method of determining happiness (and poverty) is based on a person's ability to engage in society. The impoverished frequently lack basic capacities; they may lack income or education, be ill, feel helpless, or lack political freedom. Furthermore, Buhaerah (2016) emphasized that fundamental rights include health, work, education, food, clean water, defense, housing, the environment, a sense of security, natural resources, and the right to participate in socio-political life. Hence, poverty also encourages people or groups of individuals to make real efforts toward living a dignified life (Darma et al., 2020). There must be progress to transform from a slump to a better one. In addition to social problems, other adverse effects of poverty can potentially affect economic development and the decline of HDI (Sugianto & Vasantan, 2018; Swastika & Supriyatna, 2016).

The Covid-19 pandemic had a tremendous impact on all aspects of life. For instance, the lower GRDP per capita achievement reflects economic indicators that contribute to an increase in the poor population. In addition, the Covid-19 also limited school activities, which affected the expected length of schooling, and it certainly affected health, which is directly tied to life expectancy. Inconsistencies between real-world facts and literature pose the issue on the causes of human development gaps. Similarly, arguments arise on the HDI being affected by GRDP per capita, the number of poor people, the expected length of schooling, and life expectancy.

The issues raised in this study are relevant to various United Nations Sustainable Development Goals (UNSDG), such as eradicating poverty in all of its forms worldwide, encouraging healthy lifestyles and well-being for all ages, improving educational quality, and reducing disparities (United Nations, 2015). The findings of the study are expected to have policy implications for the Indonesian government to raise the level of HDI, thus contributing to the achievement of the UN SDG Goals. Specifically, the purpose of this study was to assess how the four variables (GRDP per capita, poverty, expected length of schooling and life expectancy) affected HDI in districts/cities in Eastern Indonesia.

2. Literature review

2.1. Human Development Index (HDI)

Biao (2011) outlines that education, per capita income, and health are three significant components in HDI based on the evolution of the modern world since the emergence of classical economic theory to the idea of sustainable economic welfare. Although the utilization of HDI in various parts of the world nowadays is aimed at different goals, employing HDI as a tool for public decision-making is still worth investigating. As a significant basis, the essential principles of HDI seek to study the extent to which gross national product (GNP) plays a role in human development. Compared to other indicators, the HDI's complexity shows advancement in the multidimensionality of fundamental growth. On the other hand, the characteristics of the population's ability to receive welfare, essential health, and good education have influenced the paradigm of concentration and transformation of evolving human goals (Bagolin & Comim, 2008).

2.2. GRDP per capita

Central Bureau of Statistics defined gross regional domestic product (GRDP) as the amount of gross value added by business units in a domestic region or the sum of all the final value of products and services produced by all economic activity. GRDP per capita, or total GRDP divided by population, is a standard indicator used to assess the level of economic well-being of a region's people. GRDP per capita is also used as an indicator of overall economic performance. Income per capita is a monetary indicator of a region/country population's economic activity. The higher the income per capita, the better the economy.

National income is an essential element in driving economic growth. One of the things that can increase national income is human development. In fact, Elistia and Syahzuni (2018) found a strong correlation between HDI and GDP. GDP allows for an increase in HDI. Therefore, with a rise in HDI, there is a possibility of strengthening GDP more broadly.

On the other hand, aggregate economic and social development in numerous countries has linked the broad concept of income with the HDI components (health, morals, and education). According to Yakunina and Bychkov (2015), combining these two characteristics demonstrates the concept of comprehensive development capacity resulting to GRDP per capita positively impact HDI.

2.3. Poverty

While the concept of poverty is comprehensive, Gweshengwe and Hassan (2020) analyze and examine the characteristics of poverty. Although various notions tend to be multidimensional and complex, poverty is split into two parts: absolute and individual. Individual poverty is reflected in the severity of poverty based on sex and age. Meanwhile, the absolute nature of poverty tends to be more effective and holistic, depending on their contribution to development policies (Wagle, 2018). Deonandan (2019) asserts that the size of relative poverty is the lower threshold of the population in a country. Those said to be 'relatively poor' have less wealth than other social groups. That is, if their income is not more than 60% of the average income of the population, then they can be said to be poor.

Regina et al. (2020) examined the effect of poverty and its impact on HDI in Indonesia. Through panel data involving 33 provinces throughout Indonesia, the result showed poverty negatively affecting HDI. Similarly, Syofya (2018) found that poverty reflected by poverty thresholds and lines can significantly affect HDI in Indonesia. Meanwhile, Amaluddin et al. (2018) concluded that development performance such as HDI could explicitly reduce poverty levels in West Seram (Maluku Province). Based on the results of the previous studies, this research argues that poverty negatively impacts HDI.

2.4. Expected Length of Schooling (ELS)

Another dimension of HDI is the human knowledge or education level. Referring to the Central Bureau of Statistics (2020), the ELS is the number of the expected duration or length of school within a certain period felt by children at a certain age in the future. The

ELS is measured by involving residents aged seven years and above. It is a dimension previously included in the Average Length of Schooling (ALS). Like ALS, ELS also uses standards agreed upon by some countries with the minimum limit as zero (0), and the highest as eighteen (18). They are using ELS to analyze the current situation of the education development system from various levels.

Referring to the findings of Yogiantoro et al. (2019), in districts/cities in Central Kalimantan Province, the quality of education has been dominant in increasing HDI during 2015-2017. Meanwhile, Humaira and Nugraha (2018) found that during 2012-2015, HDI as a parameter of human development in West Kalimantan Province, tended to be determined by the quality of education. On the other hand, the study of Juliannisa and Siswantini (2019) revealed something more interesting in a smaller scope, such as Cibadak District (Sukabumi Regency, West Java Province). Findings showed that when considered carefully, human resource factors significantly impact the course of the economy in the surrounding area. A better educational status in the community becomes the basic foundation to support the sustainability of human resources. In line with this, this study posits that ELS positively impacts HDI.

2.5. Life Expectancy (LE)

LE is derived from projections against the average of each individual's age gain that is expected to continue living. It is also interpreted as the average unit year lived by individuals after they reach their birthday in a certain period. It is one of the benchmarks in evaluating government performance aimed at improving population welfare measured on the number of babies with a longer life expectancy yearly.

A further important trait is identifying variations and similarities in empirical assessments of prior studies that show the involvement of LE in HDI. For instance, Iskandar (2017) recorded 23 regencies/cities in Aceh Province that experienced a significant increase in human development. Since the existence of a particular budget for health and education, LE's performance has increased sharply and can push HDI in a sustainable direction. On a national scale, Wijaya and Suasih (2021) explained that the government's role in accelerating the increase in health and education budgets has boosted LE, which has a causal relationship to poverty. The priority program to reduce poverty is consistently improving the health and education sector. Therefore, LE has a positive impact on HDI.

3. Methodology

This research is based on hypothesis testing or explanatory research. The data used are panel data collected from publications of the Central Bureau of Statistics (BPS) Indonesia. Furthermore, the panel data combines time series data from all variables during 2012-2022, including data from 159 regencies/cities in eastern Indonesia. This research used Eviews software to calculate the data.

This research focuses on the role of the composite index in human development. The analysis model emphasizes an equation on a more practical interpretation of the results of regression calculations that still reflect the effects of each HDI dimension. The formulation of the equation is as follows:

$$HDI = \alpha 0 + \beta 1GRDP + \beta 2PP + \beta 3ELS + \beta 4LE + e \quad (1)$$

Where, HDI = Human Development Index (%); GRDP = Gross Regional Domestic Product per capita (IDR); PP = Number of poor people (%); ELS = Expected Length of Schooling (%); LE = Life Expectancy (%)

According to Gujarati and Porter (2013), three models can be used to process the panel data: the common effect model, the fixed effect model, and the random effect model. We decided, however, that a common effect model would be inappropriate for our inquiry and dropped it. In this study, the Eviews software runs a fixed effect model and a random effect model, followed by a Hausman test to evaluate which model best fits our panel data. If the Hausman test yields a probability of less than 5%, the fixed effect model can be used. Otherwise, if the result is greater than 5%, the estimate is recommended using the random effect to obtain better results.

4. Findings and Discussion

4.1. Findings

The common effect model is not used in this research since it does not display dimensions between time and area coverage with the condition of time range behavior similarity from various regions. Indeed, this is far from the case, as the characteristics of eastern Indonesia are undeniably different from those in the western and central areas of the

country. As a result, the common effect technique produces biased results with multiple interpretations (Gujarati & Porter, 2013).

The fixed effect technique prioritizes panel data based on intercept differences in each region. However, the similarity is the intercept between times. The output of fixed effects in the panel data of districts/cities in Eastern Indonesia is shown in Table 2.

Table 2

Fixed Effect panel data regression

Variable	Coefficient	T-Statistics	Prob
C	0,3602	0,1672	0,8672
GRDP	3.05E-08	11,5287	0,0000
PP	-0,1557	-13,9016	0,0000
ELS	2,6485	49,3337	0,0000
LE	0,4934	14,7255	0,0000
R^2 = 0.8919			
N = 912			

Source: Eviews 8 output, estimated 2023 data.

Based on the fixed effect regression output, the equation function is: HDI = 0,3602 + 3.05E-08 GRDP - 0,1557 PP + 2,6485 ELS + 0,4934 LE + e

The random effect, known as the Error Component Model (ECM) with particular panel data in districts/cities in Eastern Indonesia, is described in Table 3.

Table 3

Panel data regression with random effect

Variable	Coefficient	T-Statistics	Prob
C	-33,2307	-4,6197	0,0000
GRDP	8.74E-11	0,0231	0,9816
PP	-0,1279	-3,6792	0,0002
ELS	1,5991	11,8686	0,0000
LE	1,2037	9,7756	0,0000
R^2 = 0.9747			
N = 912			

Source: Eviews 8 output, estimated 2023 data.

The equation of regression results from the random effect is: HDI = -33.2307 + 8.74E-11 GRDP - 0.1279 PP + 1.5991 ELS + 1.2037 LE + e

In addition, if the Hausman test shows probability with criteria below 5%, then the fixed effect model is feasible to apply and vice versa. If above 5%, the estimate is recommended through random effect to get better results.

Table 4

Regression of panel data with the Hausman test

Test Summary	Chi – Sq. Statistics	Chi -Sq. d.f	Prob.
Cross-section random	52,9388	4	0,0000

Source: Eviews 8 output, estimated 2023 data.

Table 4 shows the probability of the Hausman test <0.05. In conclusion, applying the model with panel data related to HDI from districts/cities in Eastern Indonesia has met the criteria. Then the fixed effect is the best fit for the data. Therefore, the function of the regression equation with a fixed effect is as follows:

HDI = 0,3602 + 3.05E-08 GRDP - 0,1557 PP + 2,6485 ELS + 0,4934 LE + e

4.2. Discussion

According to the result of fixed effect panel data regression, the R^2 value of 0.8919 implies that the variables GRDP per capita, number of poor people, expected length of schooling, and life expectancy influence the HDI by 89.19%, with the remaining 10.81% explained by factors outside the model.

With a coefficient of 3.05E-08, GRDP per capita positively impacts HDI in districts/cities in Eastern Indonesia, suggesting that every 1% rise in GRDP raises the HDI level by 3.05E-08%. Eastern Indonesia, particularly Papua and West Papua, is an example of looping economic growth, with a strong GRDP per capita but low HDI growth. A high level of GRDP per capita does not necessarily imply that every Papuan earns more than the average. Public access to health care, education, and economic development is relatively limited in various districts. In eastern Indonesia, the average HDI is 60.45, placing it in the bottom group. Papua has great natural resource potential, but it appears to have escaped the government's attention thus far, maybe due to the exploitation of an urban-biased economic paradigm. Eastern Indonesia's natural resource wealth is massively exploited, but local human resources' asset transfer and development are not optimized. According to Nainggolan et al. (2021), GRDP growth is an overall combination of the added value of services and goods produced from all economic activity at a specific period. GRDP also describes the rate of a region's development of people.

The critical task of the dual effect of expanding GRDP is to help increase the quality and quantity of human resource development. By the 'Kuznet Theory,' the achievement of continuous per capita output at all levels is a mark of modern growth (Ranis & Stewart, 2012). There will be a transformation in consumption patterns based on purchasing power intensity. The increase in purchasing power of the population, of course, can boost HDI. According to Ranis and Stewart (2012), one of the indicators to measure the level of welfare of the people of an area is to look at the GRDP per capita figure. The higher economic quality of the population also represents the quality of high economic growth in an area. Economic development characterized by inclusive growth is an absolute requirement to achieve harmonization in human development. There is a guarantee for income and productivity improvement through the availability of jobs if the mission is to boost economic growth.

Statistical results show that the number of poor people hurts HDI with a coefficient of -0.1557, which means that every 1% increase in the number of poor people reduces the HDI rate by approximately 0.15%. Data from 2012 to 2022 show a tendency for the percentage of poor people to rise, resulting in a drop in HDI. Papua, one of the provinces in Eastern Indonesia, has a high poverty rate, while the HDI shows a low level. This situation aligns with Malthus Theory (Budhijana, 2020). The 'Malthusian Theory' highlights that as population expansion increases, so does the need for food supplies, and it will almost definitely come down to the capacity or availability of food stocks, which will become increasingly limited and scarce. Those classified as lower middle class or low-income will find it hard to access food and be pushed into poverty. As broadly defined, poverty is when a person no longer has sufficient resources to live a decent life. Even basic (primary) needs can fail to satisfy them effectively. Because poor people have little purchasing power, they cannot meet their physical and non-physical needs. Because of this, their standard of living is low. A low standard of living can hurt human development.

With a coefficient of 2,6485, the expected length of schooling (ELS) positively affects HDI in districts/cities in Eastern Indonesia, with every 1% rise in ELS increasing HDI by roughly 2.64%. ELS demonstrates the intensity and concern for a region's education sector. The higher the ELS, the greater the level of schooling pursued. The generally accepted theory is that, the higher an individual's level of education, the higher the quality of both mindset and behavior. Several districts/cities in Eastern Indonesia, such as East Nusa

Tenggara, Maluku, and North Maluku, demonstrate a high level of concern for education, as evidenced by the higher average length of school expectations compared to other regions in Eastern Indonesia, as well as a higher HDI level, implying that the expected length of schooling has a positive influence on HDI. The Human Capital Theory states that the educated population is a productive-age population, emphasizing the quantity of education to improve the quality listed in the 'Theory of Productivity and Work Efficiency.' It is interesting to note that changes in the level of cognitive abilities of individual workers will increase productivity economically. Dasic et al. (2020) linked ELS to HDI in countries incorporated in the Western Balkans region and conclude that HDI growth is increasing along with the progress of human development in terms of improvements in the field of comprehensive education. In their implementation, they adopt specific action plans and strategies to expand the knowledge of the population by providing pathways of competency for the short and long term.

With a coefficient of 0.4934, life expectancy (LE) positively influences HDI in districts/cities in Eastern Indonesia. With every 1% rise in LE, it is increasing HDI by roughly 0.49%. According to Health Economic Theory, the theory's practice and techniques focus more on health economics. They are closely related to the ability to allocate resources to encourage improving individual health, thus requiring policies in organizing, financing, and providing health facilities and services (e.g. Bauchner et al., 2020; Chhatwal & Postma, 2021; Sullivan et al., 2020). The theory is an elaboration and application of economics that focuses on the health sector to bring differences in broadening horizons on how to treat, restore health, and prevent for the community. LE is very appropriate to show the government's ability to improve public welfare, especially health status, as LE also describes the average age of individuals in the community in certain mortality situations. If the LE in an area is low, it means that development in the health sector has not been successful, and vice versa (Saha & Zhang, 2017). Lonska and Boronenko (2015) presented a trend of competitiveness and achievement of human development in the global scope of 2006-2012, which is relatively high and not necessarily in line with its capacity for growth. Realistically, global comparative results also represent that economic growth is driven by human resource productivity.

Interestingly, high HDI also does not necessarily indicate the capacity of quality human resources, where the analysis of human resource development currently tends to be

very competent if supported by improvements in nutrition and good health. Generally, people in Western and Central Indonesia have the support of adequate health facilities, so they have the opportunity to obtain decent livelihoods and welfare. Those in the East, however, are less likely to have good health support. Therefore, the HDI level in the eastern region tends to be lower than in other parts of Indonesia.

5. Conclusion

This study consistently examined the factors that have influenced the HDI in recent years, including GRDP per capita, the number of poor people, the length of schooling, and life expectancy in Eastern Indonesia. This study discovered that GRDP per capita, ELS, and LE have a significant and beneficial effect on HDI; however, increasing the number of poor people hurts HDI. Differences in these four elements in each of Indonesia's regions cause HDI disparities. The study's policy implications are that the Indonesian government can emphasize equitable distribution and improve the quality of human development in eastern Indonesia, specifically by increasing the proportion of households with access to electricity, clean water, and adequate housing. Improving HDI can be achieved in the education and health sectors by increasing the number of schools and improving health facilities in eastern Indonesia. These policies hopefully reduce the HDI gap.

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