

# THE EFFECT OF ENVIRONMENTAL ADAPTATION, HUMAN DEVELOPMENT INDEX AND INFLATION ON PROVINCIAL AND URBAN ECONOMIC GROWTH IN INDONESIA



Anggun Kinanti Tarigan <sup>\*b</sup>, Cut Putri Mellita Sari <sup>\*a</sup>

<sup>\*</sup>Faculty of Economics and Business Malikussaleh University

Corresponding author: <sup>a</sup> [cutputri.mellita@unimal.ac.id](mailto:cutputri.mellita@unimal.ac.id)

<sup>b</sup> [anggun.210430121@mhs.unimal.ac.id](mailto:anggun.210430121@mhs.unimal.ac.id)

## ARTICLE INFORMATION

## ABSTRACT

**Keywords:** *Environmental Quality Index, Human Development Index, Inflation, Economic Growth, Fixed Effect Model (FEM)*

*This study aims to analyze how the Environmental Quality Index, Human Development Index, and Inflation affect Economic Growth at the provincial level in Indonesia. This study uses panel secondary data from 34 provinces in Indonesia for the period 2020 to 2024, obtained from official publications of the Central Statistics Agency (BPS) and the Ministry of Environment and Forestry (MoEF). To achieve the research objectives, a panel data regression analysis method was used with a Fixed Effect Model (FEM) approach processed using the Eviews-12 program. The results of the study show that partially, the variables of the Environmental Quality Index, Human Development Index, and Inflation have a positive and significant effect on economic growth, respectively. Simultaneously, these three variables also have a positive and significant effect on economic growth in Indonesia. These findings confirm that efforts to improve environmental quality, accelerate human development, and maintain inflation stability have an important role in encouraging sustainable economic growth at the regional level.*

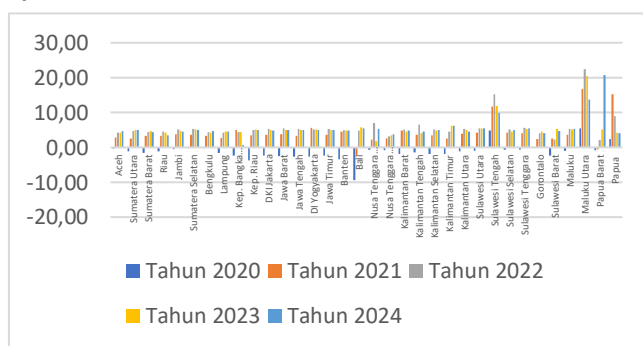
## PENDAHULUAN

As a developing country, Indonesia is striving to realize sustainable and equitable economic development throughout the region. With abundant natural resource potential and a large population, Indonesia has a great opportunity to grow into a country with a strong economy. However, in practice, national economic development still faces various serious challenges, such as high levels of poverty, unemployment, disparities between regions, and income distribution inequality.

One of the main indicators in assessing a country's economic performance is economic growth. In Indonesia, economic growth shows a fluctuating trend from year to year. In 2020, Indonesia experienced an economic contraction of -2.07% due to the impact of the COVID-19 pandemic that hit almost all sectors of the economy. Nevertheless, the national economy managed to recover by recording growth of 5.3% in 2022 (BPS, 2024)

Success in economic growth has a major impact on economic development, especially in Indonesia. Therefore, economic growth is one of the benchmarks to assess how people carry out economic activities so that there can be a significant increase or decrease in a country's economic growth. The following is the value of economic

growth of provinces/cities in Indonesia in 2020 – 2024:



Source: BPS Indonesia Data, 2025

Figure 1 Value of Province/City PE in Indonesia in 2020–2024 (Percent)

By the end of 2024, North Sumatra Province recorded the highest economic growth on the island of Sumatra at 5.03%, mainly driven by household consumption. In addition, the agriculture, fisheries, and large and retail trade sectors also experienced an increase that strengthened the regional economy. Effective state spending support and coordination between the central and regional governments through infrastructure development, social assistance, and investment in strategic sectors have

helped accelerate growth (BPS, 2024). On the other hand, the Bangka Belitung Islands Province recorded the lowest growth of 0.77%, due to mining governance problems that hampered tin exports, even reaching zero shipments in early 2024. In fact, tin mining is the main source of livelihood for the local community. In addition, the corporate services, transportation, warehousing, finance, insurance, and wholesale and retail trade sectors remain the main contributors to the province's Gross Regional Domestic Product (GDP) (BPS Bangka Belitung, 2025)

Java Island with the highest provincial economic growth is DI Yogyakarta province at 5.03%, which is driven by strong domestic demand including investment performance, household consumption and government consumption as the main drivers of economic growth. The increase in the Minimum Wage (UMP) in 2024 and the increase in the Regional Revenue and Expenditure Budget (APBD) have a positive impact on government spending and encourage economic activity. In addition, the ongoing construction of National Strategic Projects (PSN), such as the Jogja-Solo toll road project, the South Cross Road, and the Sleman – Gunung Kidul alternative road, also contribute to economic growth in the construction sector. In terms of the business field, the accommodation and food and beverage sector, which is closely related to the tourism sector, this is driven by the increasing number of tourist visits, especially on national holidays. Optimism for economic growth in Yogyakarta Province is also supported by the continuity of infrastructure development that continues to encourage economic growth in the future (BPS DIY, 2025). On the other hand, Banten Province is the province with the lowest economic growth value on the island of Java at 4.79%, growth slower than in 2023 due to the processing industry sector which was not fully operational throughout the year, especially in the first quarter. This has an impact on slowing growth in six fields of the industrial and construction sectors, whose growth is almost stagnant compared to the previous year (BPS Banten, 2025).

On the island of Kalimantan, East Kalimantan Province recorded the highest economic growth of 6.17%, supported by positive performance in various sectors such as mining, processing industry, construction, agriculture, forestry, fisheries, and trade (BPS Kaltim, 2025). On the other hand, Central Kalimantan Province had the lowest growth of 4.46%, due to the contraction of the processing industry sector and weaker mining growth

compared to East Kalimantan (BPS Central Kalimantan, 2024).

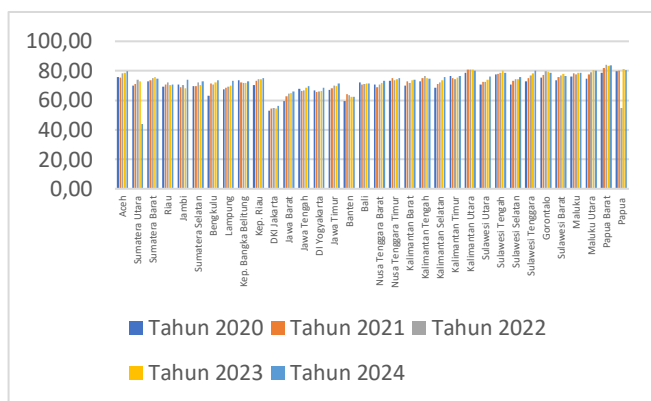
On the island of Sulawesi, Central Sulawesi Province recorded the highest economic growth of 9.89%, with a large contribution from the processing industry sector which grew 19.12%, financial services and insurance 11.48%, and the provision of accommodation and food and beverages of 7.58%. The agriculture, forestry, fisheries, and mining and quarrying sectors also experienced growth of 1.93% and 6.19%, respectively (BPS Central Sulawesi, 2025). On the other hand, Gorontalo Province recorded the lowest growth of 4.13%, lower than the previous year, due to the economic structure that is still dominated by the agriculture, forestry, fisheries, as well as large trade, vehicle repair, and construction. Although several sectors such as trade, construction, and accommodation provision show positive growth, the limitations of industrial diversification are the main obstacles to Gorontalo's economic growth (BPS Gorontalo, 2024b).

West Papua Province on the island of Papua recorded the highest economic growth of 20.80%. This growth was supported by exports of goods and services which increased by 16.10%, LNPR consumption expenditure increased by 9.84%, and household consumption increased by 3.91%, although gross fixed capital formation contracted by 2.56% (BPS West Papua, 2024). Papua Province recorded the lowest economic growth on the island of Papua at 4.11%, although all business sectors grew, but the growth of key sectors such as electricity and gas (8.74%), government administration (7.20%), and transportation (6.73%) was still moderate and slower than 2023 which reached 4.22%. Papua's economic structure is still developing with the need for diversification in the agriculture, fisheries, tourism, and creative economy sectors that are not optimal. Growth in household consumption and low fixed capital formation have also slowed overall economic growth.

Economic growth and environmental quality are intertwined and often pose a dilemma. Initially, economic improvement could exacerbate environmental damage due to overexploitation of resources. However, according to the Environmental Kuznets Curve theory from (Panayotou, 2001), after income reaches a certain level, people begin to pay attention to environmental cleanliness so that the quality improves. Studies by Tadesse and Zeleke (2021) also confirm that a positive relationship between economic growth and the environment only occurs

if development is carried out in a sustainable manner with effective environmental policies. So, good economic growth is one that not only adds GDP, but also maintains and improves the quality of the environment for long-term sustainability.

The Environmental Quality Index (IKLH) describes environmental conditions, including air, water, and land cover. The relationship between economic growth and IKLH is complex. Economic growth can improve the quality of the environment by strengthening the government's ability to finance environmental programs such as waste management and conservation. However, without a sustainable approach, economic growth risks degrading environmental quality due to increased emissions, resource exploitation, and uncontrolled land change (Handayani & Maulidah, 2021; Nugroho et al., 2020). The following is the value of the province/city environmental quality index in Indonesia in 2020 – 2024:



Data Source: MoEF, 2025

Figure 2: Value of Province/City Environmental Quality Index in Indonesia 2020 – 2024 (Points)

By the end of 2024, Aceh Province on the island of Sumatra will have the highest environmental quality index value of 79.66. This is supported by good environmental management, high land quality, forest protection, and sustainable agricultural practices, plus the role of government policies and active communities (DLHK Aceh, 2024). On the other hand, Riau Province recorded the lowest score of 70.77, due to pollution from industry, households, and small businesses, low air and water quality, as well as deforestation problems, forest fires, and limited environmental management capacity (Ministry of Energy and Mineral Resources, 2025)

On the island of Java, East Java Province has the highest environmental quality index thanks to improved sustainable water, air, and land management. Its success is supported by regional environmental programs, green technology, and cross-sector collaboration (DLHK East Java, 2024). Meanwhile, DKI Jakarta recorded the lowest value

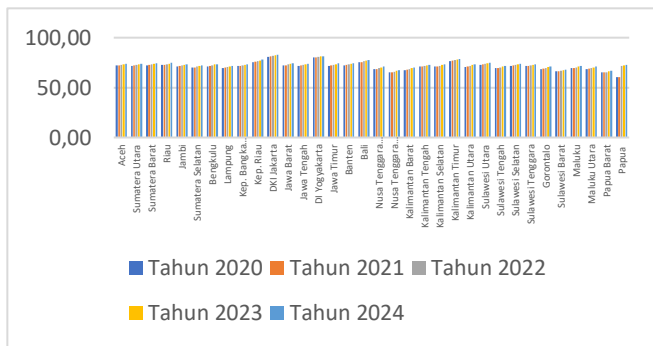
of 56.38 due to high air pollution, especially PM2.5 particles during the dry season due to El Nino, as well as water pollution from domestic and industrial waste (DLHK DKI Jakarta, 2024).

On the island of Kalimantan, North Kalimantan Province has the highest environmental quality index of 79.95, thanks to the vast expanse of protected forests and strict supervision of companies, as well as the implementation of a 2045 zero carbon emission target that improves air, water, and land quality. On the other hand, West Kalimantan recorded the lowest index of 74.05 due to the pressure of economic activities that reduced water and land quality, indicating that economic growth there has not been supported by adequate environmental management (DLHK West Kalimantan, 2025).

On the island of Sulawesi, Southeast Sulawesi Province has the highest environmental quality index of 80.14 thanks to proactive government policies, public cleaning activities, and the implementation of a circular economy such as maggot cultivation for organic waste management (Southeast Sulawesi DLHK, 2024). Meanwhile, South Sulawesi recorded the lowest score of 75.70 because it still faces environmental management challenges, such as high vehicle emissions in Makassar, pollution of tourist areas, and the process of forest and land rehabilitation (DLHK South Sulawesi, 2024).

On the island of Papua, West Papua Province has the highest environmental quality index of 83.75 due to good environmental management, especially in water, air, and land cover quality, as well as improving the quality of marine land (DLHK Papua, 2024). Meanwhile, Maluku Province recorded the lowest score of 78.59 due to limited monitoring, budget, and community activities that negatively impact the environment.

Kualitas sumber daya manusia menjadi salah satu indikator penting dalam pertumbuhan ekonomi negara. Modal manusia yang berkualitas tinggi akan meningkatkan produktivitas nasional. Salah satu cara mengukur kualitas modal manusia adalah melalui Indeks Pembangunan Manusia (IPM), yang mencerminkan taraf pembangunan ekonomi berdasarkan faktor pendidikan, kesehatan, dan indikator ekonomi lainnya. Berikut nilai indeks pembangunan manusia provinsi/kota di Indonesia tahun 2020 – 2024:



Data Source: BPS, 2025

Figure 3 Value of the Provincial/City Human Development Index in Indonesia 2020 – 2024 (points)

By the end of 2024, Riau Islands Province will have the highest Human Development Index (HDI) on the island of Sumatra at 77.97. This success is supported by progress in the three main dimensions of HDI: life expectancy of 75.12 years, length of schooling of 13.27 years, and real expenditure per capita of Rp 15.573 million per year, as well as the development of workforce skills that meet regional needs (BPS Riau Province, 2024). On the other hand, Lampung Province has the lowest HDI in Sumatra at 71.81, due to limited access to education, health, and lower income, thus facing challenges in increasing school life expectancy, life expectancy, and community living standards despite improvements in recent years (BPS Kaltim, 2024)

On the island of Java, DKI Jakarta Province has the highest Human Development Index (HDI) of 83.08, supported by advances in health, education, and living standards. Life expectancy reaches 75.99 years, average school length is 11.49 years with an average school length of 13.51 years, and real per capita expenditure is around Rp 19.95 million (BPS West Java, 2025). On the other hand, West Java Province has the lowest HDI in Java, which is 73.43, because it still faces obstacles in extending the school period, improving the quality of education, and relatively lower life expectancy and per capita expenditure (DLHK Maluku, 2025).

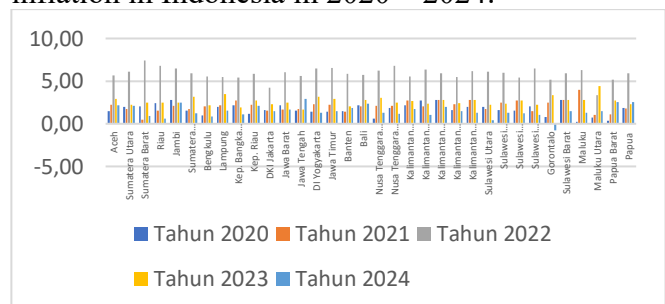
On the island of Kalimantan, East Kalimantan Province has the highest Human Development Index (HDI) of 78.83, the result of an increase in life expectancy of 74.94 years, life expectancy of 14.03 years, and real expenditure per capita of IDR 13.79 million per year (BPS East Kalimantan, 2023). On the other hand, West Kalimantan Province has the lowest HDI of 70.13, with a life expectancy of 73.94 years, an average school life expectancy of 12.68 years, an average school age of 7.78 years, and real expenditure per capita of IDR 10.321 million, all of which are still lower than other provinces in Kalimantan (BPS West

Kalimantan, 2024)

On the island of Sulawesi, North Sulawesi Province has the highest Human Development Index (HDI) of 75.03, supported by life expectancy of 74.08 years, life expectancy of 12.97 years, average school length of 9.84 years, and real per capita expenditure of IDR 12 million per year (Central Statistics Agency, 2021). On the other hand, West Sulawesi Province recorded the lowest HDI of 68.20 with challenges in the three dimensions of HDI, namely life expectancy of 71.03 years, life expectancy of 12.89 years, average school length of 8.15 years, and per capita expenditure of Rp 10.21 million per year which is still lower than other provinces in Sulawesi (BPS West Sulawesi, 2024)

On the island of Papua, Papua Province has the highest Human Development Index (HDI) of 73.00, supported by an increase in life expectancy of 70.47 years, a school life expectancy of 13.72 years, and real per capita expenditure of Rp 11 million per year reflecting progress in the fields of health, education, and welfare (BPS Papua, 2024). Meanwhile, West Papua Province recorded the lowest HDI of 67.02, with challenges in the three dimensions of HDI, namely the average length of schooling of 7.86 years, the expectation of school length of 13.17 years, life expectancy of 68.47 years, and the real expenditure per capita of Rp 8.80 million per year which is still lower than other provinces in Papua.

Inflation is one of the important macroeconomic indicators to measure the economic stability of a country. Changes in inflation will affect economic growth that occurs. Economically, inflation is a monetary phenomenon that indicates a general and sustained increase in prices within a country. Fluctuations in inflation often cause economic instability. If a region or country is able to keep the inflation rate stable, then it can be considered a developed country. On the contrary, economic instability due to uncontrolled inflation indicates that the country or region has not yet achieved the status of a developed country. (Lia Purnama Sari, 2021). The following is the value of province/city inflation in Indonesia in 2020 – 2024:



Data Source: BPS, 2025

#### Figure 4 Province/City Inflation Value in Indonesia 2020 – 2024 (percent)

At the end of 2024 on the island of Sumatra, Jambi Province recorded the highest inflation of 2.50%, mainly influenced by price increases in the food, beverage, tobacco, clothing, footwear, and housing and household energy groups (BPS Jambi, 2021). On the other hand, Bengkulu Province has the lowest inflation of 0.84%, due to a decrease in the price index in the food, beverage, tobacco, and information, communication, and financial services groups (BPS Bengkulu, 2024).

Java Island, Central Java Province recorded the highest inflation of 2.89%, triggered by price increases in various expenditure groups such as food, beverages, tobacco, clothing, housing, health, transportation, education, and other services (BPS Central Java, 2024). Meanwhile, DKI Jakarta Province has the lowest inflation of 1.48%, due to a decline in the index in the transportation and information, communication, and financial services groups (BPS DKI Jakarta, 2024).

The island of Kalimantan, South Kalimantan Province recorded the highest inflation of 1.95%, which was caused by price increases in ten expenditure groups such as food, clothing, housing, health, transportation, education, and personal services (BPS South Kalimantan, 2024). In contrast, Central Kalimantan Province has the lowest inflation of 1.03%, due to a decline in the index in the clothing and footwear as well as information, communication, and financial services groups (BPS Central Kalimantan, 2024).

Sulawesi Island, Gorontalo Province recorded the highest inflation of 2.78%, driven by price increases in nine expenditure groups such as food, clothing, housing, health, transportation, recreation, and education (BPS Gorontalo, 2024). Meanwhile, North Sulawesi Province has the lowest inflation of 0.44%, due to a decline in the index in the clothing, household appliances, transportation, information, communication, financial services, and education groups (BPS North Sulawesi, 2024).

Papua Island, West Papua Province recorded the highest inflation of 2.53%, triggered by an increase in almost all expenditure groups such as food, housing, household supplies, education, and personal services (BPS West Papua, 2024). On the other hand, Maluku Province has the lowest inflation of 1.28%, due to a decline in the index in the recreation, transportation, and information, communication, and financial services groups (BPS Maluku, 2024).

This study is new because it examines the influence of the Environmental Quality Index

(IKLH), Human Development Index (HDI), and inflation simultaneously on provincial economic growth in Indonesia in the 2020-2024 period. Different from previous studies that only focused on HDI or inflation, this study adds IKLH as an indicator of environmental adaptation, thus providing an ecological perspective that is rarely used in Indonesia's regional economy. This approach provides a more complete understanding and new empirical data for more sustainable and environmentally friendly regional development policies.

Based on the description above, the author is interested in conducting research on "**The Influence of Environmental Adaptation, Human Development Index and Inflation on Province/City Economic Growth in Indonesia**".

## LITERATURE REVIEW

### Economic Growth

According to Sukirno in (Susanti & Sari, 2018), economic growth is the ability of businesses in an economy to develop economic activities for the realization of infrastructure, and higher education levels with existing technological advances. With the hope that job opportunities will increase, the community's income will also be better along with the achievement of community prosperity.

### Environmental Adaptation

Environmental adaptation is an adjustment process carried out by living things, both plants, animals, and humans to face typical conditions and challenges in forest ecosystems. These adjustments include changes in physical shape, body function, and behavior, such as the growth of thick leaves to reduce evaporation, a broader root system to increase nutrient absorption, and changes in life/migration patterns in search of resources.

### Human Development Index (HDI)

According to (BPS, 2023) HDI is something that explains how residents can access development results in obtaining income, health, education, and so on. HDI was also introduced by *the United Nations Development Programme* (UNDP) in 1990 and is published periodically in the annual Human Development Report (HDR).

### Inflation

Samuelson in (Devi & Murtala, 2019) states that inflation is a state in which there is an increase in the general price level, both goods, services and factors of production in a certain period.

## Kerangka Konseptual

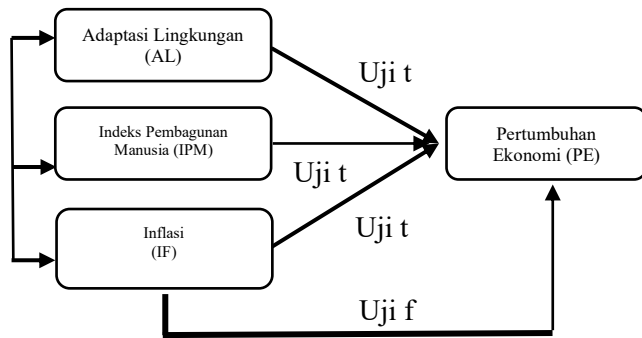


Figure 5 : Conceptual Framework

### Hipotesis

- $H_1$ : Environmental Adaptation is suspected to have a positive and significant effect on the Economic Growth of Provinces/Cities in Indonesia
- $H_2$ : Human Development Index is suspected to have a positive and significant impact on the Economic Growth of Provinces/Cities in Indonesia
- $H_3$ : Inflation is suspected to have a positive and significant effect on the Economic Growth of Provinces/Cities in Indonesia
- $H_4$ : Environmental Adaptation, Human Development Index, and Inflation are suspected to have a positive and significant effect on Province/City Economic Growth in Indonesia

## RESEARCH METHODS

### Research Object and Location

Search objects are things that are targeted in a search. The object of this research is related to environmental adaptation, human development index, and inflation as free variables and economic growth as bound variables. The location of the research is a province/city in Indonesia in 2020 – 2024.

### Types of Data Sources

This study uses secondary data from 2020 – 2024. Secondary data is data that has been published by the Central Statistics Agency and the Environment Agency.

### Data Analysis Methods

The data analysis method used is panel data regression analysis which is a combination of cross section data with a time series, namely several variables are observed based on several categories and collected at a specified time limit. Panel regression testing was performed to see the correlation between independent variables and

bound variables. The formulation of panel data regression analysis in the study is: (Sugiyono, 2016)

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it}$$

Where:

$Y$	= Bound Variable
$X_1, X_2, X_3$	= Independent Variable
$\beta_0$	= Constant/Intersep
$\beta_1, \beta_2, \beta_3$	= Regression Coefficient
$i$	= Cross section
$t$	= Time series
$\varepsilon$	= Error terms

So the equation of this research model can be obtained as follows:

$$PE_{it} = \beta_0 + \beta_1 AL_{it} + \beta_2 IPM_{it} + \beta_3 IF_{it} + \varepsilon_{it}$$

Where:

$PE$	= Economic Growth
$\beta_0$	= Constant/Intersep
$\beta_1, \beta_2, \beta_3$	= Regression Coefficient
$AL$	= Environmental Adaptation
$IPM$	= Human Development Index
$IF$	= Inflation
$i$	= 34 Provinces/Cities in Indonesia
$t$	= Year 2020 - 2024
$\varepsilon$	= Error terms

### Panel Data Analysis

Panel data analysis is a combination of two data, namely time series and cross section data by combining the two to improve the quality of data in the research. There are several techniques to assess the estimated parameters, including:

- The Common Effect Model is the simplest approach to the panel data regression model because it only combines time series and cross section data.
- The Fixed Effect Model assumes that there are differences between individuals that can be accommodated from differences in their interceptions.
- The Random Effect Model estimates panel data where the interference variables may be interrelated between time and between individuals.

### Panel Data Regression Estimation Technique

#### a Chow Test

The Chow test is used to determine the best model between the Common Effect Model or the Fixed Effect Model. Decision making in the chow test by comparing the probability value with a significant level (),

provided that the probability value of cross section  $> 0.05$  is accepted, meaning that the most appropriate model is the Common Effect model, while if the cross section probability value  $< 0.05$  is rejected, it means that the most appropriate model is the Fixed Effect Model.

- b Hausman Test  
This Hausman test was carried out to see which model was selected between the Fixed Effect Model or the Random Effect Model. If the probability value of chi square  $< 0.05$ , then the chosen model is the Common Effect Model.
- c Uji Lagrange Multiplier  
The lagrange multiplier test is performed for models between the Common Effect Model or the Random Effect Model. If the Brueshagan cross section value is  $< 0.005$ , then the correct model is the Random Effect Model.

**Classic Assumption Test**

- a Multicollinearity Test  
Multicollinearity is a linear relationship between independent variables. This test aims to test whether there is a high or perfect correlation between independent variables in the model (Gujarati, 2012)
- b Heteroscedasticity Test  
The Heteroscedasticity test aims to ensure that the variance of residual or error has a constant nature (homoskedasticity). One of the methods used to detect it is to look at the scatter plot chart pattern between the predicted value of the dependent variable and the residual, if the graph shows a certain pattern (spreading out forming a fan/funnel pattern), then this indicates a symptom of heteroscedasticity (Ghozali, 2013).

**Uji Hypothesis**

- a Partial Test (t-test)  
The t-test was performed at a significant level of 0.05 with a degree of freedom that compared the calculated t-value and the table t-value. If  $f$  calculates  $> t$  table, then the independent variable has no effect on the dependent variable. Meanwhile, if  $t$  calculates  $< t$  table, the independent variable affects the dependent variable.
- b Simultaneous Test (f-test)  
The f test is carried out to test the influence of the dependent variables together on the dependent variables. If the statistical significance of the f-test  $< 0.05$ , then the f-

test null hypothesis is rejected at a significant level = 5%. This means that all independent variables have a significant influence on dependent variables. $\alpha$

- c Coefficient of Determination ( $R^2$ )  
The determination coefficient test was carried out to measure the extent of the model's ability to explain dependent variables. The value of the determination coefficient (ranges from zero and one  $R^2$ )( $0 \leq R^2 \leq 1$ ). If the value is small, it indicates that the ability of the indent variable to explain the dependent variable is very limited. Conversely, if it is close to one, it means that an independent variable can almost completely explain the variation of the existing dependent variable.

**RESULTS AND DISCUSSION**  
**Panel Data Regression Selection**  
**Chow Test Results**

**Table 1**  
**Chow Test Results**

Redundant Fixed Effects Tests  
Equation: Untitled  
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.627700	(33,133)	0.0000
Cross-section Chi-square	109.124656	33	0.0000

Source : Data Processing Results Eviews 12, 2025  
Based on Table 1 above, the results of the Redundant Common Effect Test were obtained with a probability value of Chi-Square  $< 5\%$ , which is  $0.00 < 0.05$ . This means that the Fixed Effect Model is better used than the Common Effect Model based on the results of this test. $\alpha$

**Hausmant Test Results**  
**Table 2**  
**Hausmant Test Results**

Correlated Random Effects - Hausman Test  
Equation: Untitled  
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.512713	3	0.0002

Source : Data Processing Results Eviews 12, 2025  
Based on table 2 above, the Chi-Square probability value is  $< 5\%$ , which is  $0.00 < 0.05$ . This means that the Fixed Effect Model is better used than the Random Effect Model based on the results of this test. The Fixed Effect Model is the best model to use, so there is no need to do a Lagrange Multiplier test.

## Panel Data Regression Analysis

**Table 3**  
**Fixed Effect Model Test Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-68.46127	14.85861	-4.607515	0.0000
IKLH	0.218817	0.079629	2.747972	0.0068
IPM	0.759473	0.191105	3.974120	0.0001
IF	0.618558	0.142694	4.334844	0.0000

Source : Data Processing Results Eviews 12, 2025  
Based on table 4, the regression equation of panel data can be found as follows:

$$PE = -68,46127 + 0,218817IKLH_{it} + 0,759473IPM_{it} + 0,618558IF_{it}$$

From the regression equation, it can be explained that: constant of -68.46127 means that if all independent variables, namely the Environmental Quality Index, Human Development Index, and Inflation are zero, then economic growth is estimated at 68.46127%. The Environmental Quality Index coefficient of 0.218817 indicates that every 1% increase in the Environmental Quality Index will increase Economic Growth by 0.218817% assuming other variables are constant. The Human Development Index coefficient of 0.75954 indicates that every 1% increase in the Human Development Index will increase Economic Growth by 0.75954% assuming other variables are constant. The inflation coefficient of 0.618558 indicates that every 1% increase in Inflation will increase Economic Growth by 0.6185% assuming other variables are constant.

## Koefisien Masing – Masing Provinsi

**Tabel 4**

Provinsi	Fixed Effect Model	Intersep
Aceh	-2.531564896	-70.992835
Sumatera Utara	0.148297764	-68.312972
Sumatera Barat	-2.135435712	-70.596706
Riau	-1.719197705	-70.180468
Jambi	-0.356931269	-68.818201
Sumatera Selatan	1.09891362	-67.362356
Bengkulu	-0.015518918	-68.476789
Lampung	0.685138648	-67.776131
Kep. Bangka Belitung	-1.474490591	-69.935761
Kep. Riau	-4.544104882	-73.005375
Dki Jakarta	-3.740103312	-72.201373
Jawa Barat	0.582699934	-67.87857
Jawa Tengah	-0.150597466	-68.611867
Di Yogyakarta	-5.571762077	-74.033032
Jawa Timur	-0.503413333	-68.964683
Banten	0.670433034	-67.790837
Bali	-6.248742317	-74.710012
Nusa Tenggara Barat	1.633561577	-66.827708
Nusa Tenggara Timur	2.639591403	-65.821679
Kalimantan Barat	2.027061138	-66.434209
Kalimantan Tengah	-0.78596281	-69.247233
Kalimantan Selatan	-0.604937822	-69.066208
Kalimantan Timur	-5.081793731	-73.543064
Kalimantan Utara	-1.936504715	-70.397775
Sulawesi Utara	-1.303699274	-69.764969
Sulawesi Tengah	6.81897807	-61.642292
Sulawesi Selatan	-1.087559643	-69.54883
Sulawesi Tenggara	-0.932039386	-69.393309
Gorontalo	-0.01809012	-68.47936
Sulawesi Barat	1.456533985	-67.004736
Maluku	-0.118453942	-68.579724
Maluku Utara	12.89930303	-55.561967
Papua Barat	4.392123665	-64.069146
Papua	5.808268051	-62.653002

Source : Data Processing Results Eviews 12, 2025  
Based on Table 4, the constant coefficient values of 34 provinces/cities in Indonesia can be explained by the value of the coefficient (C) describing the high and low levels of Economic Growth if assuming the variables of the Environmental Quality Index, Economic Growth Index, and Inflation.

1. Aceh Province obtained an Intercept/constant value of -70.99, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, the Economic Growth of Provinces/Cities in Indonesia is -70.99.
2. North Sumatra Province obtained an Intercept/constant value of -68.31, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, the Economic Growth of Provinces/Cities in Indonesia is -68.31.
3. West Sumatra Province obtained an Intercept/constant value of -70.59, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, the Economic Growth of Provinces/Cities in Indonesia is -70.59.
4. Riau Province obtained an Intercept/constant value of -70.18, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is as large as -70.18.
5. Jambi Province obtained an Intercept/constant value of -68.81, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.81.
6. South Sumatra Province obtained an Intercept/constant value of -67.36, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -67.36.
7. Bengkulu Province obtained an Intercept/constant value of -68.47, meaning that if the variables of the Environmental Quality Index, Human Development Index,

and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.47.

8. Lampung Province obtained an Intercept/constant value of -67.77, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -67.77.
9. The Bangka Belitung Islands Province obtained an Intercept/Constant value of -69.93, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -69.93.
10. Riau Islands Province obtained an Intercept/constant value of -73.01, which means that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -73.01.
11. DKI Jakarta Province obtained an Intercept/constant value of -72.21, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -72.21.
12. West Java Province obtained an Intercept/constant value of -68.87, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -67.87.
13. Central Java Province obtained an Intercept/constant value of -68.61, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.61.
14. DI Yogyakarta Province obtained an Intercept/constant value of -74.03, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -74.03.
15. East Java Province obtained an Intercept/constant value of -68.96, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.96.
16. Banten Province obtained an Intercept/constant value of -67.79, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -67.79.
17. Bali Province obtained an Intercept/constant value of -74.71, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -74.71.
18. West Nusa Tenggara Province obtained an Intercept/constant value of -66.82, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.82.
19. East Nusa Tenggara Province obtained an Intercept/constant value of -65.82, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -65.82.
20. West Kalimantan Province obtained an Intercept/constant value of -66.43, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -66.43.
21. East Kalimantan Province obtained an Intercept/constant value of -69.24, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -69.24.
22. South Kalimantan Province obtained an Intercept/constant value of -69.06, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -69.06.
23. East Kalimantan Province obtained an Intercept/constant value of -73.54, meaning

that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -73.54.

24. North Kalimantan Province obtained an Intercept/constant value of -70.39, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -70.39.
25. North Sulawesi Province obtained an Intercept/constant value of -69.76, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -69.76.
26. Southeast Sulawesi Province obtained an Intercept/constant value of -61.64, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -61.64.
27. South Sulawesi Province obtained an Intercept/constant value of -69.54, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -69.54.
28. Southeast Sulawesi Province obtained an Intercept/constant value of -69.39, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -69.39.
29. Gorontalo Province obtained an Intercept/constant value of -68.47, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.47.
30. West Sulawesi Province obtained an Intercept/constant value of -67.00, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -67.00.
31. Maluku Province obtained an Intercept/constant value of -68.57, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -68.57.
32. North Maluku Province obtained an Intercept/constant value of -55.56, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -55.56.
33. West Papua Province obtained an Intercept/constant value of -64.06, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -64.06.
34. Papua Province obtained an Intercept/constant value of -62.65, meaning that if the variables of the Environmental Quality Index, Human Development Index, and Inflation are zero, then the Economic Growth of Provinces/Cities in Indonesia is -62.65.

### Classic Assumption Test Multicollinearity Test

**Table 5**  
**Multicollinearity Test Results**

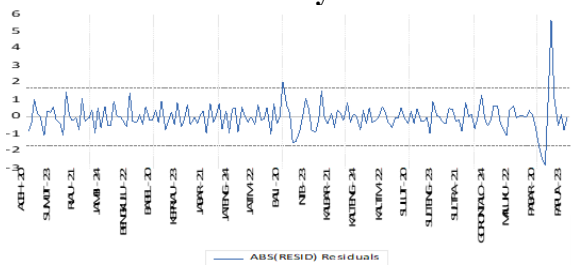
	IKLH	IPM	IF
IKLH	1.000000	-0.478280	0.013236
IPM	-0.478280	1.000000	-0.006121
IF	0.013236	-0.006121	1.000000

### Source : Data Processing Results Eviews 12, 2025

Based on table 5, it can be seen that the correlation value of the Environmental Quality Index is 0.47, the Human Development Index is 0.00 and Inflation is 0.01. All three are still far below 0.90. This shows that this model is free from any indication of multicollinearity.

## Heteroscedasticity Test

**Table 6**  
**Heteroscedasticity Test Results**



Source : Data Processing Results Eviews 12, 2025

Based on table 6, it can be seen that the residual points are scattered randomly around the horizontal axis without forming a specific pattern, either narrowing or widening them. This random residual spread indicates that the variance of the error is constant and the residual graph (in blue) does not cross the boundary (500 and -500), thus concluding that the regression model does not experience heteroscedasticity problems.

In panel data regression, testing of other assumptions such as autocorrelation and residual normality is not strictly required, especially if the selected model is a Fixed Effect Model/Random Effect Model. This is because the panel model approach has been able to accommodate differences between individuals and time, so it is considered not to have a significant effect on the validity of the model (Ghozali, 2018).

## Uji Hypothesis Partial Test (T Test)

**Table 7**  
**Results of the t-count hypothesis**

Variabel Bebas	t-Statistik	t-Tabel	Alpha	Prob	Ket
IKLH	2.747972	1.959963	0,05	0.0068	Signifikan
IPM	3.974120	1.959963	0,05	0.0001	Signifikan
IF	4.334844	1.959963	0,05	0.0000	Signifikan

Source: Eviews 12, 2025 Data Processing Results  
Based on table 8, the t-statistics of the Environmental Quality Index variable are 2.747972 > 1.959963 with a probability value of 0.0068 < 0.05, which means that the Environmental Quality Index has a positive and significant effect on the Economic Growth of Provinces/Cities in Indonesia. The variable of the Human Development Index is 3.974120 > 1.959963 with a probability value of 0.0001 < 0.05, which means that the Human Development Index has a positive and significant effect on the Economic Growth of Provinces/Cities in Indonesia. The Inflation variable is 4.334844 > 1.959963 with a probability value of 0.0000 < 0.05, which means that Inflation has a positive and

significant effect on the Economic Growth of Provinces/Cities in Indonesia.

## Simultaneous Test (F Test)

**Table 8**  
**Results of the F-count Hypothesis**

F-Statistik	F-Tabel	Alpha	Prob	Ket
4.294251	2.66039	0,05	0.000000	Signifikan

Source: Eviews 12, 2025 Data Processing Results  
Based on table 8, the F-statistical value of > F table is obtained which is 2.66039 > 0.05, which means that together the Environmental Quality Index, Human Development Index, and Inflation have an effect and are significant on the Economic Growth of Provinces/Cities in Indonesia.

## Coefficient of Determination $R^2$

**Table 9**  
**Determination Test Results  $R^2$**

R-squared	0.537541
Adjusted R-squared	0.412364
S.E. of regression	3.179109
Sum squared resid	1344.195

Source : Data Processing Results Eviews 12, 2025  
Based on table 9, the coefficient of determination Adjusted = 0.412364 was obtained. Therefore, it can be concluded that the variables of the Environmental Quality Index, Human Development Index, and Inflation to Economic Growth in this study are 41.24%, while 1 – 0.412364 = 58.76 others are influenced by variables that are more relevant to economic growth in Indonesia.

## Discussion

### The Effect of the Environmental Quality Index on Economic Growth

The results of the study show that the Environmental Quality Index variable has a positive and significant effect on the economic growth of provinces/cities in Indonesia. This analysis is in line with Sustainable Development Theory, which emphasizes that economic growth cannot be separated from environmental and social aspects.

In this context, development that pays attention to the quality of the environment not only maintains the balance of the ecosystem, but also opens up new economic opportunities. A better quality environment can also increase long-term

productivity because it creates healthy and comfortable living conditions. These findings are in line with the results of research (Aisah, 2024), Rahmawati (2024), and Effendy et.al (2021).

### **The Influence of the Human Development Index on Economic Growth**

The results of the study show that the Human Development Index variable has a positive and significant effect on the economic growth of provinces/cities in Indonesia. This analysis is in line with the Human Capital Theory put forward by Schultz (1961) and Becker (1964), which explains that investment in human resources can increase individual productivity and contribute to encouraging the economic growth of a country. These findings are in line with the results of research by Lestari (2023), Karerina (2022), and Tanjung (2019).

### **The Effect of Inflation on Economic Growth**

The results of the study show that the inflation variable has a positive and significant effect on the economic growth of provinces/cities in Indonesia. This analysis is close to the view of Keynesian Theory, which explains that a little inflation can spur the economy through increased consumption and investment. These findings are in line with the results of Salsabila et al. research. al (2020), Qnita (2022), and (Satria, 2017).

### **The Effect of the Environmental Quality Index, Human Development Index, and Inflation on Economic Growth**

The independent variables of the Environmental Quality Index, Human Development Index, and Inflation can be concluded that the f test is known together that the variables of the Environmental Quality Index, Human Development Index, and Inflation have an effect on the Economic Growth of Provinces/Cities in Indonesia. Judging from the f-value of the > f-table statistics, which is  $4.294251 > 2.66039$  with a probability value of  $0.000000 < 0.05$ .

## **CLOSING**

### **Conclusion**

Based on the data regression analysis of the panel's impact of the quality of living environment index, human development index, and inflation on the economic growth of provinces/cities in Indonesia, the following conclusions were obtained:

1. Partially, the environmental quality index has a positive and significant effect on the

economic growth of provinces/cities in Indonesia.

2. Partially, the human development index has a positive and significant effect on the economic growth of provinces/cities in Indonesia.
3. Partially, inflation has a positive and significant effect on the economic growth of provinces/cities in Indonesia.
4. Simultaneously, the environmental quality index, the human development index, and inflation together have a positive and significant effect on the economic growth of provinces/cities in Indonesia.

### **Suggestion**

Based on the results of analysts and conclusions, the suggestions given by the author are:

1. The government must increase the integration between environmental policies and economic development strategies, so that the Environmental Quality Index is not only an administrative target.
2. Improving the Human Development Index should be a top priority, as this effort is believed to continue to boost labor productivity and strengthen the foundation of Indonesia's economic growth in the long term.
3. Stable and controlled inflation management needs to be maintained so that inflation remains at a reasonable level and does not harm the real sector. The government can strengthen fiscal and monetary policy coordination to create a conducive economic climate.

## **BIBLIOGRAPHY**

- Aisah, L. (2024). Dampak Kualitas Lingkungan Terhadap Pertumbuhan Ekonomi: Pentingnya Menjaga Kualitas Air Dan Udara Di Era Modern (Studi Kasus Indonesia). *EKOMA : Jurnal Ekonomi, Manajemen, Akuntansi*, 4(1), 2974–2991.  
<https://doi.org/10.56799/ekoma.v4i1.6345>
- Badan Pusat Statistik. (2024). Ekonomi Indonesia triwulan IV-2023 tumbuh 5,04 persen (y-on-y).  
<https://www.bps.go.id/pressrelease/2024/0>

2/05/2379/ekonomi-indonesia-triwulan-iv-2023-tumbuh-5-04-persen--y-on-y-.html

- Badan Pusat Statistik. (2024). Pertumbuhan Ekonomi Indonesia Triwulan IV Tahun 2023. Jakarta: BPS. Diakses dari <https://www.bps.go.id>
- Badan Pusat Statistik,(2022). Indeks Pembangunan Manusia (IPM) Provinsi Aceh Tahun 2022. Publikasi, Badan Pusat Statistik Provinsi Aceh.
- Effendy, M., Nurhasanah, N., & Iqbal, M. (2024). Does environmental quality affect economic growth? Empirical evidence from Southeast Asian countries. *Environmental Economics and Policy Studies*, 26, 187–209. <https://doi.org/10.1007/s10018-024-00447-9>
- Ghozali, I. (2013). Aplikasi Analisis Multivariate Dengan Program IBM SPSS 21 Update PLS Regresi. Badan Penerbit Universitas Diponegoro.
- Ghozali, I. (2018). Aplikasi Analisis Multivariate dengan Program IBM SPSS 25. Semarang: Badan Penerbit Universitas Diponegoro.
- Gujarati, D. (2010). Dasar-Dasar Ekonometrika. Salemba Empat.
- Handayani, W., & Maulidah, I. (2021). Pertumbuhan ekonomi dan degradasi lingkungan: Pendekatan indeks kualitas lingkungan hidup di Indonesia. *Jurnal Ekonomi dan Pembangunan Indonesia*, 21(1), 45–58.
- Kementrian ESDM, 2024. (2025). Laporan Kinerja Direktorat Jenderal Pengendalian Pencemaran dan Kerusakan Lingkungan. <Http://Kemdikbud.Go.Id/>, 4(Mei), 197. <https://www.menpan.go.id/site/publikasi/unduh-dokumen-2/akuntabilitas-kinerja/laporan-kinerja/file/6647-laporan-kinerja-lakip-2021>
- Lestari, R. (2023). Pengaruh Human Development Index terhadap Pertumbuhan Ekonomi Luwu Raya Tahun 2014–2023. ResearchGate.
- Lia Purnama Sari, M. A. N. J. (2021). Pengaruh Inflasi Terhadap Pertumbuhan Ekonomi Di Sumatera Utara. *Journal of Innovation Research and Knowledge*, 01(7), 411–418. <https://www.bajangjournal.com/index.php/JIRK/article/view/815>
- Nugroho, H. A., Purwanto, A., & Setiawan, E. (2020). Dampak pertumbuhan ekonomi terhadap kualitas lingkungan di Indonesia. *Jurnal Ekonomi Lingkungan*, 8(2), 100–113.
- Panayotou, 2003. (2001). Economic Growth and the Environment (CID Working Paper No. 56). *Environment and Development*, 56, 114.
- Rahmawati, O. L. N. (2024). Analisis Pengaruh Indeks Kualitas Lingkungan Hidup terhadap Pertumbuhan Ekonomi di Indonesia. Skripsi. Universitas Sebelas Maret.
- Satria, D. (2017). Analisis Dampak Inflasi Terhadap Pertumbuhan Ekonomi Indonesia. *Jurnal Pendidikan Ekonomi (JUPE)*, 3(5), 1–24.
- Susanti, P., & Sari, C. P. M. (2018). Pengaruh Pertumbuhan Ekonomi Dan Pertumbuhan Penduduk Terhadap Tingkat Partisipasi Angkatan Kerja Di Kota Lhokseumawe Periode 2007-2015. *Jurnal Ekonomika Indonesia*, 7(2), 33. <https://doi.org/10.29103/ekonomika.v7i2.710>
- Salsabila, F., Oktarina, D., & Suryani, T. (2023). Pengaruh Inflasi, Nilai Tukar, dan Suku Bunga terhadap Pertumbuhan Ekonomi di Indonesia (Pendekatan ARDL). *Jurnal Ekonomi Manajemen dan Sosial Republik Indonesia (JEMENSRI)*, 4(3), 120–135. <https://journal.lembagakita.org/jemensri/article/view/3041>
- Sugiyono, P. D. (2016). Metode Peneliian. Kuantitatif, Kualitatif, Dan R&D.
- Tanjung,N. (2019). Pengaruh Indeks Pembangunan Manusia Terhadap Pertumbuhan Ekonomi Provinsi Sumatera Utara. In Institut Agama Islam Negeri Padangsidempuan.