



THE EFFECT OF INFLATION AND GROSS DOMESTIC PRODUCT ON VALUE-ADDED TAX REVENUE IN INDONESIA WITH HUMAN DEVELOPMENT INDEX AS A MODERATING VARIABLE

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Abstract

This research is a quantitative study aimed at examining the effect of inflation and Gross Domestic Product (GDP) on Value Added Tax (VAT) revenue in Indonesia, with the Human Development Index (HDI) as a moderating variable. The study utilizes secondary data obtained from the Central Bureau of Statistics, the World Bank, and the Central Government Financial Reports. The population includes data on inflation, GDP, HDI, and VAT revenue in Indonesia from the period of 1990 to 2022. Using a saturated sampling technique, a total of 33 samples were analyzed. The research employs time series data with an observation period from 1990 to 2022. The analytical method used is Moderated Regression Analysis (MRA), supported by the SPSS 23 software. The results of the analysis indicate that inflation negatively affects VAT revenue, while GDP positively influences VAT revenue. On the other hand, HDI does not moderate or significantly affect the relationship between inflation and VAT revenue or between GDP and VAT revenue. HDI, as a moderating variable, weakens the effect of inflation on VAT revenue because a higher HDI reflects a population with better education and income levels, which tend to maintain more stable consumption patterns despite inflationary pressures. HDI focuses on social aspects (education, health, and income) that do not directly influence the relationship between GDP and VAT revenue, as VAT revenue is predominantly driven by consumption.

Keywords: Human Development Index, Inflation, Gross Domestic Product, Value Added Tax.

INTRODUCTION

One of the most significant and essential sources of revenue for many countries worldwide is taxation, particularly for nations without natural resources that can be commercially traded. Income from natural resources generally serves as a supplementary source and is not as substantial as tax revenue (Permadi & Wijaya, 2022). Therefore, taxes play a crucial role in state administration, financing development, and expenditures such as employee salaries, infrastructure development, and investments (Faisol & Norsain, 2024). The Goods and Services Tax, known as Value-Added Tax (VAT), is one of the taxation systems implemented by many countries globally (Tricahyono & Wijaya, 2024). Based on Law No. 7 of 2021, VAT is collected incrementally throughout the production and distribution processes and is imposed on the consumption of goods and services within customs territories.

VAT revenue is influenced by several macroeconomic indicators, such as inflation, the exchange rate of the rupiah, and gross domestic product. The first indicator, inflation, measures consistent changes in the prices of goods and services. If the prices of goods and services continue to rise, it indicates the presence of inflation. Inflation can also result from an increase in the money supply, which contributes to rising prices (Amelia & Kunawangsah, 2023). Inflation occurs in every country, with one of its primary causes being the role of the state in controlling economic policies, such as fiscal policies encompassing taxation, levies, incentives, and disincentives (Luciana & Ngadiman, 2021). According to Arifatunnisa & Witono (2022) a decline in inflation leads to an increase in household income, which, in turn, boosts tax revenue. Thus, a reduction in inflation encourages household consumption, thereby increasing VAT revenue.

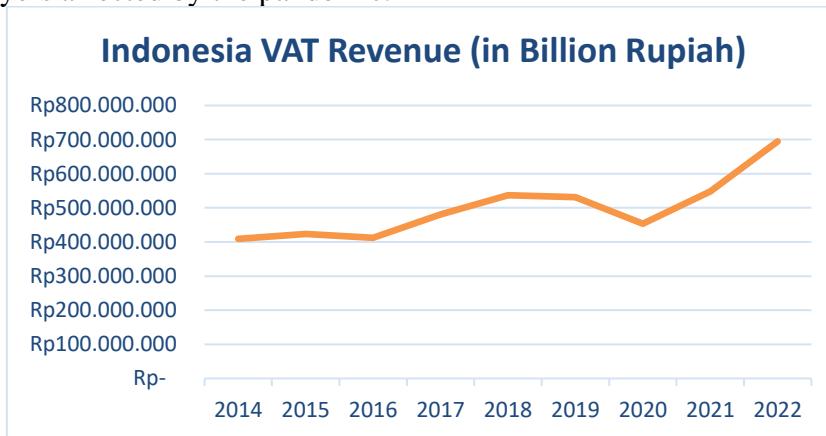


Source: Data processed (2024)

Figure 1. Indonesia Inflation Data 2014 – 2022

Based on the data, it can be observed that inflation in Indonesia tends to fluctuate. Inflation was recorded at 8.36% in 2014. It then declined to 3.35% in 2015. In 2016, the inflation rate further decreased to 3.02%, before rising again to 3.61% in the following year. Subsequently, from 2018 to 2020, the inflation rate continued to decline, reaching a low of 1.68%. In 2021, inflation increased slightly to 1.87%, followed by a significant surge to 5.51% in 2022, attributed to global price pressures.

The COVID-19 pandemic in 2019 led to an economic downturn in Indonesia, marked by numerous business closures and restrictions on business activities. This condition directly impacted Value-Added Tax (VAT) revenue, which reached only 88.35% of the target in 2020. The decline was not solely due to weakened business activities, but also the provision of subsidies to taxpayers affected by the pandemic.



Source: Data processed (2024)

Figure 2. Indonesia VAT Revenue 2014 - 2022

In 2014, the amount of VAT revenue collected was IDR 409,181,627,426,617, which increased to IDR 423,710,816,241,713 in 2015. However, in the following year, there was a decline to IDR 412,213,453,510,472. In 2017, VAT revenue rose again to IDR 480,724,607,483,756. Subsequently, from 2018 to 2020, a sharp decline of 14.89% was observed compared to 2019. This downturn was attributed to the COVID-19 pandemic and the accompanying decline in Gross Domestic Product (GDP) growth. In the subsequent two years, VAT revenue experienced consecutive increases, amounting to IDR 548,396,434,702,449 and IDR 694,776,882,555,958, respectively.

According to Puspitha & Supadmi (2018), VAT revenue is closely linked to a country's economic growth. Positive economic growth can enhance national income. Therefore, to increase VAT revenue, the government must monitor the stability of economic growth indicators. The rate of Gross Domestic Product (GDP) growth is the most common measure used to describe a country's financial progress (Darmawan et al., 2023). GDP represents the total production of goods and services created within a country over a specific period.



Source: Data processed (2024)

Figure 3. Indonesia Gross Domestic Product Data 2014 - 2022

The growth rate of GDP has tended to fluctuate in recent years. In 2014, Indonesia's GDP reached 5.01%, but it declined to 4.88% in 2015 due to global economic issues, high inflation, a current account deficit, and the depreciation of the rupiah. The economic slowdown continued from 2016 to 2020, with a sharp contraction in 2020 of -2.07% due to the COVID-19 pandemic, which reduced consumer purchasing power and increased unemployment (Salim et al., 2021). In 2021, economic recovery efforts successfully pushed GDP growth to 3.7%. Recovery continued in 2022, with GDP increasing to 5.31%.

The taxes collected are distributed evenly across all regions in Indonesia, with the aim of improving the quality of life for the population through economic development in each area. However, in practice, improving quality of life remains a significant challenge in development. In 1990, the United Nations Development Programme (UNDP) established the Human Development Index (HDI) as an indicator to measure the success of human development. In Indonesia, the Central Statistics Agency provides the HDI as a strategic measurement tool to assess the success of a region or country in improving human quality of life, reflecting the level of development, and evaluating government performance.



Source: Data processed (2024)

Figure 4. Human Development Index in Indonesia, 2014 – 2022

According to Figure 4, Indonesia's Human Development Index (HDI) increased from 68.90 in 2014 to 69.55 in 2015 and continued to rise to 72.91 in 2022. Indonesia's human development status also improved from medium to high between 2016 and 2019. However, this progress was not without challenges. In 1999, Indonesia's HDI declined from 67.70 to 64.30 due to the economic crisis that began in 1997 (Setiawan & Hakim, 2013). Further analysis reveals disparities in human development across regions. These disparities stem from several factors contributing to the low quality of human resources in certain areas, resulting in underdevelopment, unmet community welfare, and low HDI scores. If these disparities remain unaddressed, more developed regions will continue to advance, while less developed areas will fall further behind (Prasetyowati & Panjawa, 2022). One clear example of this disparity is the HDI gap between DKI Jakarta and Papua. In 2022, DKI Jakarta recorded an HDI of 82.77,



whereas Papua's HDI was only 62.16. This highlights that DKI Jakarta receives more attention in terms of human development, while Papua lags significantly. It is therefore the government's responsibility to ensure equitable attention across all regions, such as by focusing on economic growth as an indicator of successful development that improves the welfare of the population (Chaironi & Prakoso, 2022).

Inflation is related to welfare because it affects people's ability to purchase everyday goods. Inflation has a dual impact: some benefit from it, while others face losses due to rising prices (Kiha et al., 2021). Meanwhile, a higher GDP typically signals improvements in health, literacy, and income, which contribute to the rising parameters of the Human Development Index. Economic growth is usually accompanied by increased investment, enabling both the government and the private sector to provide better social services and facilities, thereby enhancing the quality of life for the population (Maqbool Ur-Rahman & Hyder, 2024).

According to the Indonesian government, Value Added Tax (VAT) has the potential to become a major source of national revenue due to the growth opportunities in consumption among the middle class (Agustina & Hartono, 2022). Consumption by Indonesia's middle class has become an important part of the country's income, especially from consumption taxes such as VAT. This is because, in addition to being the largest tax base for VAT, the middle class is also the largest contributor to aggregate consumption (Wicaksono et al., 2020). The Human Development Index (HDI) as a moderating variable can be seen in its relationship with inflation and Gross Domestic Product (GDP). The negative effects of rising inflation include a decrease in purchasing power and overall welfare. Welfare levels are measured by the HDI. Meanwhile, from the GDP perspective, it is said that as the economy continues to grow, people will change the way they spend money to meet their needs. Income indicators, one of the components of HDI, are related to people's purchasing power to consume goods (Hasibuan, 2023).

Research by Widya Oktaviani et al (2024), Danang Tricahyono and Suparna Wijaya (2024) indicates that inflation causes product prices to rise, which reduces the quantity of products purchased by consumers. As a result, VAT revenue does not experience an increase. Conversely, Anisya Ramadhani Putri et al (2020) suggest that inflation has a positive relationship with VAT revenue. Meanwhile, Arifatunnisa dan Witono (2022) argues that inflation does not affect VAT revenue. Research by Indra Darmawan et al (2023), Widya Oktaviani et al (2024), and Danang Tricahyono and Suparna Wijaya (2024) reveals that Gross Domestic Product (GDP) has a positive effect on VAT. VAT revenue will increase when the production of goods and services subject to VAT rises and when the welfare level of the population improves, as it boosts consumer purchasing power. In contrast, Febryandhie Ananda dan Diana Putri (2022) presents different findings. Research by Asmara et al (2024) suggests that GDP does not affect the Human Development Index (HDI), whereas Aminda et al (2024) find that increased economic growth enhances the HDI. Inflation negatively impacts the HDI, according to Nurinsana and Sudirman (2023). However, Herman (2021) concludes that inflation does not affect the HDI. Okoeguale and Oluwatuyi (2021) reveal that VAT has a positive impact on both GDP and the HDI.

Based on the background, the researcher intends to examine the impact of inflation and GDP on Value Added Tax (VAT) revenue with the Human Development Index (HDI) as a moderating variable in Indonesia from 1990 to 2022. The reason for choosing Indonesia as the object of the study is based on its geographical and demographic aspects. Indonesia, as an archipelagic country with thousands of islands, creates a vast and diverse market for goods and services. Furthermore, the large population contributes to increased purchasing power and consumption.



LITERATURE REVIEW

Keynesian theory

John Maynard Keynes was an economist from the United Kingdom. In the 20th century, he introduced Keynesian Theory in his publication titled "The General Theory of Employment, Interest, and Money." Keynes's theory is a macroeconomic theory that focuses on the total expenditure in the economy and its consequences on production levels, employment, and inflation (Oktaviani et al., 2024). This theory also emerged as a response to the Great Depression of 1929, which caused a decline in production and employment levels in European and North American countries (Pal, 2022).

Keynes stated that when demand exceeds supply, prices will rise, resulting in inflation. Uncontrolled inflation can lead to economic instability, where wages and prices cannot adjust quickly, creating an imbalance between demand and supply in the market. Keynes believed that effective demand management was crucial for achieving economic stability. He cautioned that while an increase in the money supply can stimulate growth, an excess of money circulating without a corresponding increase in production can lead to inflation (Keynes, 1936).

Keynes further explained that Gross Domestic Product (GDP) depends on the volume of labor performed within the economy. GDP, as a measure of total economic output, is related to effective demand. This is because effective demand determines how much output is produced. The level of effective demand impacts GDP. When high, effective demand will increase output or GDP, which in turn will boost the amount of labor employed. Conversely, when low, production will decrease, and GDP will not reach its full potential, resulting in unemployment (Keynes, 1936).

Human development heavily relies on the increase in labor absorption and the reduction of unemployment. Keynes emphasized that fiscal policies, such as increasing government spending or cutting taxes, can boost aggregate demand, ultimately generating more job opportunities (Keynes, 1936). Government expenditures, such as investments in the education sector, aim to improve human resources quality. This is reflected in the enhancement of individuals' knowledge and skills, as well as in labor productivity (Mahroji et al., 2019).

Structural Determinant

In the study conducted by Castañeda Rodríguez (2018), Gross Domestic Product (GDP) and inflation are considered structural determinants because both reflect a country's economic conditions, influence tax revenues, and play a significant role in long-term economic stability. These structural issues are particularly prevalent in developing countries, where inflation is not merely a monetary issue but also influenced by the economic structure, which is often still agrarian (Prihadyatama & Asep Kurniawan, 2022). The structural determinants approach suggests that inflation often originates from structural imbalances in the economy, not solely from monetary factors. Structural factors such as regulatory policies, labor markets, and technological developments can impact producers' ability to raise prices, which contributes to inflation (Hasdiana et al., 2023).

On the other hand, GDP presents a long-term challenge for countries to enhance their capacity to produce goods and services, making it a crucial element in the structure of the economy and growth. Factors influencing GDP growth include an increase in the labor force, prior and new investments that expand production capacity, and technological advancements. From the perspective of investment, a larger GDP fosters greater investment. The growth of GDP reflects improving economic conditions, which encourages investment, thereby opening up broader markets and driving technological progress (Hendra Permana & Rivani, 2013).

An analysis of the structural factors of GDP provides important insights for policymakers as it reveals the interdependence between production and consumption processes. A high level of consumption expenditure can drive GDP growth, as increased demand for goods



and services tends to boost production and employment (Bătuşaru et al., 2023). Bătuşaru et al (2023) also state that government expenditure can shape the economic structure towards improvement if directed towards critical sectors such as defense, education, healthcare, infrastructure, and other public.

Tax Morale

According to Luttmer dan Singhal (2014), tax morale is defined as a combination of non-financial motivations and other factors that influence tax compliance. Additionally, tax morale is also seen as the intrinsic motivation to pay taxes, reflected in an individual's willingness to pay. A person may view paying taxes as a moral obligation because they believe that paying taxes contributes to society. On the other hand, tax morale also includes feelings of regret or guilt if tax fraud occurs. If the taxpayer's sense of regret or guilt is strong enough, they will be more willing to pay taxes (Torgler, 2003).

Referring to the study by Castañeda Rodríguez, 2018), the Human Development Index is included as part of tax morale. One of its elements, the relationship between education and tax morale, is explained by the fact that education influences individuals' behavior, making them more compliant with taxes. Educated individuals tend to be more aware of the welfare benefits provided by the state (Rodríguez-Justicia & Theilen, 2018). Education is linked to higher cognitive abilities, which are essential for understanding the relationship between tax payments and the indirect benefits received personally. Additionally, educated individuals have better access to information and the ability to process information received from the media. Education is a crucial pillar in a country's progress, as it shapes individuals who can bring positive changes to their own lives and society (Meilani & Inayati, 2024).

Value Added Tax (VAT)

In 1954, France introduced the concept of Value Added Tax (VAT) for the first time. Initially, VAT was only applicable in France. The European Commission accepted and recommended that this tax be applied in all European Community countries based on the findings of the special Neumark Committee report published in 1963 (Kowal & Przekota, 2021). Value Added Tax (VAT), also known as Goods and Services Tax (GST), is an indirect tax applied at every stage of the production and distribution process (Audu & Ajibade, 2021). The value added at each stage of the production chain, where the value is generated, is the purpose of VAT. VAT is applied to all transactions within the economy. To calculate VAT, the VAT rate (11%) is multiplied by the Tax Base.

Inflation

Inflation is defined as the overall increase in the prices of goods and services over a significant period, which eventually leads to a decrease in purchasing power and disrupts the economy (Soje & Tanko, 2024). A high inflation rate causes an increase in the prices of goods and services produced by a country, leading to higher prices, reduced exports, and diminished competitiveness. Inflation causes imports to grow faster while exports slow down (Ilmas et al., 2022). Inflation can also be defined as the continuous rise in prices over a certain period. A price increase in one or two goods is not categorized as inflation unless it triggers a rise in the prices of other goods (Ramadhanti et al., 2021).

The Consumer Price Index (CPI) is a common measure of inflation that tracks the price changes of goods and services purchased by households over a specific period. Below is the formula to calculate the CPI:

$$\text{Inflation} = \frac{(IHK_t - IHK_{t-1})}{IHK_{t-1}} \times 100\%$$

Gross Domestic Product

Economic growth is typically assessed through Gross Domestic Product (GDP), which reflects a country's production and consumption capacity (Rachmawaty et al., 2024). According



to Bryniuk (2023), GDP is the most effective measure of economic growth and economic activity. One of the key indicators of a country's economic health is GDP, which is calculated by summing the total goods and services produced within the country over a specific period, usually 12 months (Kosovo & Berisha, 2023).

GDP growth reflects the annual increase in the production of goods and services, contributing to the overall economic growth of a country. The GDP growth rate is typically announced by the government as a percentage (%). The following formula is used to calculate economic growth:

$$GDP = \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}} \times 100\%$$

Human Development Index

The United Nations Development Programme (UNDP) launched the Human Development Index (HDI) in 1990. HDI was designed to emphasize that the assessment of a country's development should focus on people and their capabilities, rather than solely on economic growth. Furthermore, HDI can be used to interpret how societies can utilize the results of development to gain income, health, education, and other benefits (Ariansyah, 2018). HDI consists of three indicators that reflect a long and healthy life, knowledge, and a decent standard of living (Arisman, 2018). The Human Development Index can be formulated as follows:

$$HDI = \frac{1}{3} (Indeks X_1 + Indeks X_2 + Indeks X_3)$$

METHODS

This study uses a quantitative approach with secondary data. The selection of secondary data was made because the required information is readily available from various publicly accessible sources or has been previously published. The data used in this study include several variables, namely inflation rate, Gross Domestic Product (GDP), Human Development Index (HDI), and Value Added Tax (VAT) revenue, collected from the period 1990 to 2022. The sources of information used in this study include the Central Statistics Agency (<https://www.bps.go.id/id>), Bank Indonesia (<https://www.bi.go.id/id/default.aspx>), Country Economy (<https://countryeconomy.com/hdi/indonesia>), and the Central Government Financial Statements. The population analyzed in this study consists of annual data on inflation rate, GDP, VAT revenue, and HDI in Indonesia from 1990 to 2022. Based on the annual data, the sample consists of a total of 33 data points. This study employs a saturated sampling technique, which involves using all available data within the specified period without further sample selection. For data analysis, multiple linear regression techniques are applied using time-series data, which allows for examining the relationships between the variables analyzed over a given period. Hypothesis testing is conducted using the IBM SPSS Statistics 23 software. This study analyzes four variables: one dependent variable, VAT revenue; two independent variables, inflation and Gross Domestic Product (GDP); and one moderating variable, Human Development Index (HDI).

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

Descriptive statistical analysis is a method that aims to describe data without making general conclusions or inferences. Data in descriptive statistics can be presented in various forms, such as tables, graphs, pie charts, and pictograms. In addition, the analysis also involves the calculation of mode, median, mean, deciles, and percentiles. Data distribution can be



analyzed using calculations of mean, standard deviation, and percentages. The following are the results of the descriptive statistics for each variable in this study:

Table 1. Descriptive Statistical Analysis Results

	N	Minimum	Maximum	Mean	Std. Deviation
Inflation	33	1.68	77.63	8.8791	12.85087
GDP	33	-13.13	8.22	4.6994	3.71990
VAT Revenue	33	22.64	34.13	29.2761	4.79410
HDI	33	.526	.716	.63385	.059568

Source: SPSS v.23 output, data processed (2024)

Classical Assumption Test

Normality Test

The purpose is to determine whether the data conforms to the definition of a normally distributed set or not. The Kolmogorov-Smirnov Test is the instrument used in this analysis to assess the normality of the data. If the significance value of the test exceeds 0.05, it can be concluded that the data is normally distributed. The results of the data test are as follows:

Table 2. One-Sample Kolmogorov-Smirnov Test Result

		Unstandardized Residual
N		33
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.69694479
Most Extreme Differences	Absolute	.078
	Positive	.078
	Negative	-.075
Test Statistic		.078
Asymp. Sig. (2-tailed)		.200 ^{c,d}

Source: SPSS v.23 output, data processed (2024)

Based on table 2, it can be shown that the Asymp. Sig (2-tailed) value is obtained as 0.200, because the significance value is greater than 0.05, the data is considered normally distributed.

Multicollinearity Test

The purpose of this test is to determine whether the regression model shows a correlation between the independent variables. If there is a high or perfect correlation between the independent variables in the regression model, then the model is considered to have multicollinear symptoms. The following are the test results:

Table 3. Multicollinearity Test Result

		Collinearity Statistics	
Model		Tolerance	VIF
1	Inflation	.287	3.480
	GDP	.311	3.218
	HDI	.708	1.413

a. Dependent Variable: Ln_VAT

Source: SPSS v.23 output, data processed (2024)

Based on the multicollinearity category, it can be seen that the tolerance value of each variable is more than 0.1 (10%) and the VIF value is <10, so it can be interpreted that there are no multicollinearity symptoms between the independent, dependent and moderating variables.

Heteroskedasticity Test

The heteroscedasticity test aims to determine whether there is inequality in the regression model between residuals from one observation to another. The following is a heteroscedasticity test using the glejser test:



Table 4. Heteroscedasticity Test Result

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.529	2.629		.962	.344
Inflation	-.004	.026	-.045	-.136	.893
GDP	.051	.086	.191	.595	.556
HDI	-2.184	3.556	-.131	-.614	.544

a. Dependent Variable: ABS_RES1

Source: SPSS v.23 output, data processed (2024)

The table above illustrates that the significance value of the inflation variable (X1) is 0.893 which is greater than the value of 0.05 so the conclusion is that there are no symptoms of heteroscedasticity. As for the Gross Domestic Product variable (X2), the significance value is 0.556 > 0.05. So it is concluded that it is free from heteroscedasticity. Then, the Human Development Index variable (Z) of 0.544 is greater than the value of 0.05 so it is concluded that there is no heteroscedasticity.

Autocorrelation Test

The autocorrelation test aims to determine whether there is a correlation between one period and the previous period. The Durbin-Watson (DW) test is a technique commonly used to determine the presence of autocorrelation. The following is a table of autocorrelation test results in this study:

Table 5. Autocorrelation Test Result

Model	R	Durbin-Watson
1	.935 ^a	.883

a. Predictors: (Constant), HDI, GDP, Inflation

b. Dependent Variable: Ln_VAT

Source: SPSS v.23 output, data processed (2024)

According to the table above, it is obtained that the DW value is 0.883. Based on the decision-making guidelines regarding autocorrelation according to Singgih Santoso, the data is declared free from autocorrelation if the D-W value is in the range of -2 to +2. This is because the value of 0.883 is within this range, so it concludes that there is no autocorrelation.

Hypothesis Test

Determination Coefficient Test (R^2)

The larger the Adjusted R^2 value, the stronger the influence of the independent variables on the dependent variable. The Adjusted R^2 value ranges from zero to one, with values closer to one indicating that the independent variables are able to explain nearly all the information required to predict the dependent variable.

Table 6. Determination Coefficient Test Results before Moderation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.423 ^a	.179	.124	4.48759

a. Predictors: (Constant), GDP, Inflation

Source: SPSS v.23

output, data processed (2024)

The results show that the Adjusted R Square value is 0.124, which means that inflation and Gross Domestic Product can explain 12.4% of the variation in the Value Added Tax revenue variable. While the remaining 87.6% is not explained in this study.



Table 7. Determination Coefficient Test Results after Moderation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.938 ^a	.880	.858	1.80469

a. Predictors: (Constant), PDB * IPM, IPM, INF * IPM, PDB, Inflasi

Source: SPSS v.23 output, data processed (2024)

Based on the table above, the Adjusted R Square value is 0.858, which means that the contribution of inflation and Gross Domestic Product to Value Added Tax (VAT) revenue, after considering the moderating variable of the Human Development Index, is 85.8%, while the remaining 14.2% is not explained in this study.

T Test

The partial test aims to examine how the independent variables in the regression equation affect the dependent variable. The t-statistic value is compared with the significance level set at 5% in this test. The rule for hypothesis testing is that if the t-significance value is greater than 0.05, then H₀ is accepted and H₁ is rejected. This means that the dependent variable is not significantly affected by the independent variables in a partial manner. Conversely, if the t-significance value is less than 0.05, H₀ is rejected and H₁ is accepted. The results of the partial test are as follows:

Table 8. Model 1 Regression Test Results before Moderation (t test)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	34.308	2.437		14.076	.000
Inflation	-.247	.097	-.662	-2.541	.016
GDP	.605	.336	.469	2.802	.042

a. Dependent Variable: Ln_VAT

Source: SPSS v.23 output, data processed (2024)

Based on the t-test above, the inflation variable has a significance value of 0.016, which is less than 0.05. Therefore, it can be concluded that, partially, the inflation variable (X₁) has a negative and significant effect on Value Added Tax (VAT) revenue. Based on the t-test above, the Gross Domestic Product (GDP) variable has a significance value of 0.042, which is less than 0.05. Therefore, it can be concluded that, partially, the Gross Domestic Product (GDP) variable (X₂) has a positive and significant effect on Value Added Tax (VAT) revenue.

Next, the model 2 test is conducted after being moderated by the Human Development Index (HDI) to examine the effect of the independent variables on the dependent variable, with moderation by the Human Development Index (HDI). The results are as follows:

Table 9. Model 2 Regression Test Results after Moderation (t test)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	34.308	2.437		14.076	.000
Inflation	-.247	.097	-.662	-2.541	.016
GDP	.605	.336	.469	2.802	.042
HDI	78.679	18.109	.978	4.345	.000
INF*HDI	1.858	1.710	2.901	1.086	.287
GDP*HDI	-1.625	2.724	-.755	-.596	.556



a. Dependent Variable: VAT Revenue

Source: SPSS v.23 output, data processed (2024)

Inflation on Value Added Tax (VAT) Revenue Moderated by the Human Development Index (HDI). Based on the test results in Table 9, the significance value of the inflation variable after being moderated by the Human Development Index is 0.287. This result shows that the significance value is greater than the significance level of 0.05, indicating that H3 is rejected and H0 is accepted. Therefore, it can be concluded that the Human Development Index (HDI) is not able to moderate the effect of inflation on Value Added Tax (VAT) revenue.

Gross Domestic Product (GDP) on Value Added Tax (VAT) Revenue Moderated by the Human Development Index (HDI). Based on the test results in Table 9, the significance value of the GDP variable after being moderated by the Human Development Index is 0.556. This result shows that the significance value is greater than the significance level of 0.05, indicating that H4 is rejected and H0 is accepted. Therefore, it can be concluded that the Human Development Index (HDI) is not able to moderate the effect of Gross Domestic Product (GDP) on Value Added Tax (VAT) revenue.

F Test

The purpose of the F-statistic test is to determine whether the dependent variable is simultaneously influenced by the independent variables. The results of the simultaneous test in this study are shown in the table below:

Table 10. F Test Results

Model	F	Sig.
1	Regression	39.764
	Residual	
	Total	

Source: SPSS v.23 output, data processed (2024)

Based on these findings, the significance value is smaller than the predetermined significance level of 0.05 ($0.000 < 0.05$) and the calculated F value is greater than the F table value ($39,764 > 2.57$). These results indicate that the variables of inflation, Gross Domestic Product, Human Development Index together have an influence on Value Added Tax revenue.

Moderated Regression Analysis (MRA) Test

Multiple linear regression technique which includes an interaction element (multiplication of two or more independent variables) in the regression equation. Based on the results of the classical assumption test, Moderated Regression Analysis (MRA) analysis can be applied in this study. The following is the regression equation in this study:

$$\text{VAT} = 34,308 + -0,247\text{INF} + 0,605\text{GDP} + 78,679\text{HDI} + 1,858\text{INF} * \text{HDI} + -1,625\text{GDP} * \text{HDI} + e$$

Description:

VAT = Value Added Tax

α = Constant

INF = Inflation

GDP = Gross Domestic Product

HDI = Human Development Index

INF * HDI = Interaction between Inflation and Human Development Index

GDP * HDI = Interaction between Gross Domestic Product and Human Development Index

Effect of Inflation on Value Added Tax Revenue

Based on the tests conducted, H1 is accepted, meaning that inflation has a negative effect on Value Added Tax (VAT) revenue. A 1% increase in inflation in Indonesia results in a decrease in VAT revenue in the long term. In theory, a general increase in prices without a corresponding rise in income will weaken people's purchasing power, ultimately reducing consumption levels. From a psychological perspective, consumers tend to be more sensitive to



price increases than to income growth, leading them to cut back on spending. Moreover, inflation causes a decline in the quantity of goods produced, despite rising prices. Additionally, an increase in inflation reduces real income, which in turn decreases consumption levels and purchasing power. As a result, VAT revenue also declines (Darmawan et al., 2023).

VAT is generally imposed on specific goods and services. If the prices of these goods and services do not increase due to inflation, VAT revenue is unlikely to change. However, when inflation occurs, the quantity of goods purchased by consumers tends to decrease because the prices of goods become more expensive. If the prices of goods remain stable, VAT revenue will not increase. Additionally, inflation encourages consumers to reduce their spending on consumption, which prevents VAT revenue from reaching its full potential (Oktaviani et al., 2024).

According to Keynesian theory, high inflation can affect consumer spending because consumption is a key component of aggregate demand. This decrease in consumption will impact VAT revenue, as this tax is calculated based on the value of goods and services consumed. The fewer goods and services consumers can afford, the lower the VAT revenue will be. Additionally, other factors such as income inequality and unequal access to resources within the economic structure also contribute to the weakening of consumer purchasing power.

The results of this study align with the findings of I. Darmawan et al (2023), Oktaviani et al (2024), Ananda & Putri (2022), and Tricahyono & Wijaya (2024), which indicate that inflation has a negative impact on VAT revenue. However, this study contradicts the findings of A. R. Putri et al (2020) and Sapridawati et al (2021) who suggest that inflation has a positive effect on VAT revenue.

Effect of Gross Domestic Product on Value Added Tax Revenue

Based on the hypothesis test conducted, it was found that H2 is accepted, meaning there is a positive relationship between Gross Domestic Product (GDP) and Value Added Tax (VAT) revenue. One of the key indicators used to measure the economic development of a country is economic growth, which reflects how economic activities can enhance the income of society over a certain period. When the production of goods and services subject to VAT increases, supported by improvements in public welfare, the purchasing power of society also rises, which results in higher VAT revenue. Economic growth, as seen from the increase in GDP, also contributes to boosting government income, especially from the taxation sector such as VAT. As the level of production of goods and services in the economy rises, the number of goods and services subject to tax also increases, thereby leading to an increase in VAT revenue (Ananda & Putri, 2022).

Gross Domestic Product (GDP) affects national income, particularly in terms of increasing revenue from the tax sector. Taxes directly related to goods and services, such as Value Added Tax (VAT), will increase as trade activities of goods and services grow. When the economy grows positively, the effects are felt not only by producers and consumers but also by government revenue, especially from the taxation sector, including VAT revenue (Oktaviani et al., 2024).

This is consistent with Keynesian theory, which posits that economic growth increases household income, thereby encouraging consumption of goods and services. As consumption rises, more transactions are subject to VAT, resulting in higher tax revenues. In a developing economy, the demand for goods and services tends to increase, contributing to the growth of VAT revenue as a key source of government income. Furthermore, in a robust economic structure, an increase in GDP will contribute to higher VAT receipts, as growing economic sectors expand the tax base. This research is supported by I. Darmawan et al (2023), Oktaviani et al (2024), A. R. Putri et al (2020), Amelia et al., (2023), and Tricahyono & Wijaya (2024).



The Effect of Inflation on Value Added Tax Revenue with Human Development Index as Moderation

Inflation is defined as the continuous increase in the prices of essential household goods. This condition can affect the welfare of society and reduce purchasing power for these goods. The level of societal welfare is often measured using the Human Development Index (HDI), which includes indicators from the aspects of education, health, and economics. Based on the tests conducted, the results do not align with the hypothesis that inflation affects Value Added Tax (VAT) revenue with the Human Development Index as a moderating variable. Therefore, whether the Human Development Index is high or low, the impact of inflation on VAT revenue remains the same.

The purchasing power of the population, particularly in low-income groups, is directly affected by inflation, which in turn impacts the consumption of taxable goods and services. When inflation is high, the consumption of goods and services subject to VAT decreases, leading to a decline in tax revenue, regardless of the level of the Human Development Index (HDI) in society (Difa Fadilah et al., 2024). The Human Development Index (HDI) reflects the quality of human resources, focusing on long-term aspects such as education and health, which are less relevant in explaining the impact of inflation on VAT revenue. As such, the quality of education, health, and living standards reflected in the HDI does not directly contribute to the dynamics of VAT revenue during inflationary conditions. This suggests that the relationship between inflation and VAT revenue is more influenced by direct economic variables, such as purchasing power.

This situation also occurs due to government policies aimed at assisting economically disadvantaged or lower-income groups. These aids are implemented through various programs, such as market operations to provide basic needs at affordable prices, the distribution of Direct Cash Assistance (BLT), as well as the implementation of the Indonesia Health Card (KIS) and Indonesia Smart Card (KIP), which are designed to support access to healthcare and education services for the poor (Pangesti & Susanto, 2018). This study is in line with the findings of Herman (2021) and Febrianti & Indriyati (2020) but is not consistent with the research of Octavia et al., (2023).

The moderation effect of the Human Development Index (HDI) results in the absence of a negative influence of inflation on VAT revenue. HDI, as a moderating variable, can weaken the effect of inflation on VAT revenue because a high HDI reflects a population with better education and income, which tends to have more stable consumption patterns even in the face of inflationary pressures. People with a higher HDI are more financially literate in managing the impacts of inflation. With a high HDI, the population becomes more adaptive to inflation, resulting in more stable consumption patterns, which ultimately helps maintain the VAT revenue base. Additionally, a higher HDI leads to better tax compliance, and the VAT administration implemented by the government becomes more effective, thus stabilizing VAT revenue.

The Effect of Gross Domestic Product on Value Added Tax Revenue with Human Development Index as Moderation

The test results indicate that the Human Development Index (HDI) does not moderate the effect of Gross Domestic Product (GDP) on Value Added Tax (VAT) revenue. These findings do not support the hypothesis proposed. This means that whether the HDI is at a high or low level, the relationship between GDP and VAT revenue remains unchanged. In other words, GDP fluctuations will not lead to differences in VAT revenue, regardless of the level of HDI. This suggests that HDI does not act as a factor that strengthens or weakens the influence of GDP on VAT revenue.



The concept of value added generated by various economic sectors in a region as a whole is called Gross Domestic Product (GDP), which serves as a tool for assessing a country's economic development. Economic growth indicates an increase in the production of goods and services within an economic region over a specific period. Therefore, GDP is often used as an indicator of the government's success in managing economic sectors or as a parameter for assessing the economic performance of a country (Naila et al., 2023).

The increase in GDP is often driven by sectors that may not be fully taxed or have a low contribution to VAT revenue, such as the informal sector. On the other hand, although the Human Development Index (HDI) reflects the quality of life in terms of education, health, and purchasing power, this improvement does not necessarily translate into higher consumption of VAT-taxable goods and services, especially in developing countries or regions with heterogeneous economic structures. Additionally, uneven development in disadvantaged areas can affect the long-term quality of human resources. This is consistent with research by Naila et al (2023) and Asmara et al (2024). However, it contradicts studies by Aminda et al (2024), Ditya Manggala & Yulianty (2024), and Naufal AlFurqan et al (2022).

The Human Development Index (HDI) focuses on social aspects (education, health, and income) that do not directly influence the relationship between GDP and VAT revenue, as VAT revenue is primarily determined by consumption. The basis for VAT imposition is more influenced by aggregate economic activity (reflected in GDP) rather than the quality of human development. Therefore, the relationship between GDP and VAT revenue remains strong (significant) regardless of the level of HDI.

CONCLUSIONS

The purpose of this study is to examine the impact of inflation and Gross Domestic Product (GDP) on Value Added Tax (VAT) revenue, with the Human Development Index (HDI) as a moderating variable. Based on the results of the conducted tests, it is proven that inflation has a negative impact on VAT revenue. Additionally, this study demonstrates that GDP has a positive impact on VAT revenue. Furthermore, this study reveals that neither inflation nor GDP shows a significant impact when moderated by HDI. HDI as a moderating variable can weaken the effect of inflation on VAT because a high HDI reflects a society with better education and income, which tends to have a more stable consumption pattern despite inflationary pressures. HDI focuses on social aspects (education, health, and income) that do not directly influence the relationship between GDP and VAT revenue, as VAT revenue is primarily determined by consumption.

Suggestions

Based on the conclusions and discussions provided previously, the researcher offers several recommendations as input. For future researchers, it is suggested to expand the observation period to obtain more diverse data. Additionally, it is recommended to include additional variables in the research, as there are still many other factors that influence Value Added Tax (VAT) revenue that were not covered in this study. Furthermore, for the Indonesian government, it is expected to manage the economy through fiscal and monetary policies. The government should maintain inflation rates to avoid hyperinflation. Additionally, the government is encouraged to actively promote factors that support economic growth, thereby increasing the Gross Domestic Product (GDP). The government should also place more emphasis on development focused on human quality improvement to enhance the well-being of society, particularly in underdeveloped regions, in order to reduce economic inequality. This is crucial because human development plays a vital role in creating societal welfare.



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