RELATIONSHIP BETWEEN OVERVIEW OF FOREIGN TOURIST VISITS AND HUMAN
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Abstract

Since the Covid-19 virus was declared a pandemic by the WHO in 2020, the number of cases has continued to increase over time. In Indonesia, the total number of Corona virus cases is 95,418 people (BNPB Indonesia, 24/7/2020). Likewise in Aceh Province with 5,423 cases. This has a bad effect on various sectors.The tourism industry is one of them. BPS data shows that since the Covid-19 pandemic struck many countries around the world as well as Indonesia, the tourism industry has seen a decrease of up to 89 percent of international tourist visits as of August 2020, After the earthquake / Tsumani tragedy on December 26, 2004, the international tourist visit hit its peak in 2016 with 76,452 tourists. It was however, different from 2019 to mid-2020, declining to 1,902 individuals or 85.68 percent.while domestic tourists have dropped to 92.45 percent. Similarly, what happened was to the province of Aceh, which is the western tip of Sumatra province. The aim of this study is to analyze the impact of the visits of foreign tourists and the Human Development Index on economic growth in the Aceh province in 2004-2019 as the Covid-19 pandemic begins. The data used is secondary data sourced from the Provincial and West Aceh District Statistics

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Department and Regional Development Planning Agency Province of Aceh, so West Aceh District too. The VECM research model is the system used. Based on the results of the Granger-Causality analysis test supported by the IRF and VD analysis, the relationship between the three variables can be defined as follows: HDI has a direct effect on economic growth, where an increase in HDI will have a direct effect on increasing the value of economic growthTourism al so has a direct impact on economic development, with the growth of tourism enhancing economic growth

Keywords: VECM Model, visits, tourist, and economic growth.

INTRODUCTION

Global tourist visits to Indonesia have been experiencing a growth pattern since 1974 to hit their highest point in 2017 [1]. However several times, as in 1998 during the Asian crisis and in 2003, international tourist visits have decreased by more than 10 percent. Foreign tourist visits (tourists) to Indonesia are below the goal of 15 million in 2017. As is known, President Joko Widodo targets as many as 20 million visits to Indonesia in 2019 for the arrival of international tourists [2]. Data from the Central Statistics Agency (BPS) showed that last year's international tourist visits reached 14.04 million visits, up 21.88 percent from the previous year. Although it did not meet the goal, in the last 27 years, the arrival of foreign tourists to the country registered the highest rise (BPS, 2018) [3].

[4]On the basis of the above definition, it is clear that visits by international visitors or foreign tourists started in 1974. These visits have grown alongside growth, but the economic recession of 1998 to 2013 caused visits to begin to decline. Then until 2018, it increased steadily. This is also followed by better economic performance and an average of above 70 percent in the national human development index[5].

The number of foreign tourist visits to Indonesia cumulatively (January - April 2019) reached 5.12 million visits, a rise of 3.22 percent. However this agency also noted that the number of foreign tourist visits (tourists) to Indonesia in August 2020 was 164,970 or decreased by 89, 22 percent from the same period last year, reaching 1.51 million visits in August 2020. In addition, the majority of foreign tourists visited Indonesia in August 2020 via land entrances, for a total of 107,590 visits, accompanied by sea entrances with 51,730 visits and air entrances with just 5,650 visits. Provided the number of foreign tourist visits to Indonesia in August 2020, the number of foreign tourist visits to Indonesia decreased by 99.42 percent compared to the number of foreign tourist visits in the same month the previous year. All air entrances have experienced a decline in foreign tourist visits (BPS, 2020)[6] [7].

It can also be clarified that overseas tourist visits have continued to rise since 2014 and have undergone a dramatic decline due to the Covid-19 pandemic at the end of 2019, and this will continue until August 2020 [8]. This is because airports that are a vital mode of transportation are reduced and even closed [9][10].

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This also happened in the province of Aceh, where, due to the Aceh conflict, the number of foreign tourists visiting in 2004 was still below 100 people, and several countries still do not feel that Aceh is a tourist destination. Moreover, it began to grow with 76,452 and 75,758 individuals, respectively, until 2016 and 2017. This has resulted in economic growth in Aceh being improved. It is also accompanied by the Human Development Index of Aceh, which continues to increase in percentage[11][12].

[13][14]In addition, only one international tourist who travelled to Aceh in April 2020 was registered by the Central Statistics Agency (BPS). A dramatic reduction due to the suspension of international flights due to the pandemic of Covid-19. The number of international tourists (tourists) entering via the arrival gate in the province of Aceh decreased to 99.69 percent (popularity, June 3, 2020)[15][16]

The number of international tourists visiting Aceh continued to drop to 1,902 people in 2019, based on the above definition. This resulted in economic growth dropping to 4.15 percent, but the index of human development continued to rise to 71.90 percent.

RESEARCH METHOD

3.1 Scope of Research

The scope of this study includes tourist visitation, human development index and the economic growth of Aceh Province in the period 2004-2019.

3.2 Data Analysis Models

Stationary Test for ADF

[17][18] Data from the time series is a set of values taken from a variable at a certain time. In the time series statistical model, the time series variable needs to be tested first for stationary data, namely by seeing whether there is or is not a unit root in the model called integrated data). Using the ADF test (Augmented Dickey and Fuller, 1979) in this research to see the stationarity of the results. By testing the H0 hypothesis, testing is achieved: = 0 (the root of the unit is present). The null hypothesis is rejected if the statistical value of the ADF test is lower (more negative) than that of the critical area value. The data is stationary if the null hypothesis is denied. In the equation of regression for model estimation

Much as follows

1. Model using intercept;

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + a_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \dots\dots\dots\dots(1)$$

Model with intercept and time trend

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + a_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \dots\dots\dots\dots\dots(2)$$

Where, ?? is the differentiating factor; is an intercept (constant); is the time trend; m is the optimum lag time that generates

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white residual noises; ?? t is white residual noise. It is also very important to produce an reliable estimation of the white noise residuals when choosing the lag time.

In this analysis , there are two techniques used to choose the optimal lag period (p)

SBC (*Scwartz Bayesian Criterion*):

$$SBC = T \ln(SSE) + k \ln(T)$$ ....(3)

1. AIC (*Akaike Information Criterion*):

$$AIC = T \ln(SSE) + 2k$$ ....(4)

Where T is the total number of samples; where C is the infinite number of parameters to be calculated; where k is the total number to be estimated for the parameter; where SSE is the count of the residual squares.

Uji Kointegrasi Johansen.

1. *The diagonal elements and trace test (diagonal element test and trace test). The trace test is also known as the trajectory test, the statistical test is*

$$\lambda_{trance}(r) = -T \sum_{i=r+1}^{n} ln\left(1 - \hat{\lambda}_1\right)$$ ....(5)

2. *The maximum Eigen value test,*

$$\lambda_{max}(r, r+1) = -T \ln\left(1 - \hat{\lambda}_{r+1}\right)$$ ....(6)

Vector Error Correction Model (VECM)

The error correction model takes into account the error correction time, so from a short-term perspective, its main function is to examine the short-term relationship of the pre and post interactions between variables. In the long run, the function can examine the long-run relationship of the terms error and regression of the overall variables. So that it can obtain the feedback effect between variables from the interaction of reciprocal relationships in the short and long term [19][20]. The model used in this research is as follows:

$$\Delta Growth_t = \alpha_1 + \beta_1 (e_{t-1}) + \sum_{i=0}^{m} a_{1,i} \Delta IPM_{t-i} + \sum_{i=0}^{m} b_{1,i} \Delta Pariwisata_{t-i} + \varepsilon_{1t}$$ ....(1)

$$\Delta IPM_t = \alpha_2 + \beta_2 (e_{t-1}) + \sum_{i=0}^{m} b_{2,i} \Delta Growth_{t-i} + \sum_{i=0}^{m} c_{2,i} \Delta Pariwisata_{t-i} + \varepsilon_{2t}$$ ....(8)

$$\Delta Pariwisata_t = \alpha_3 + \beta_3 (e_{t-1}) + \sum_{i=0}^{m} b_{3,i} \Delta Growth_{t-i} + \sum_{i=0}^{m} c_{3,i} \Delta IPM_{t-i} + \varepsilon_{3t}$$ ....(9)

In relation to equation (3.7), the null hypothesis test is as follows:
H0: $\beta 1 = 0$, rejects H0, Growth will move towards long-term equilibrium at a certain level.
H0: $a1i = 0$, rejects H0, Growth can be explained by past growth.

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H0: b1i = 0, rejects H0, HDI is the cause of the change in growth,
namely, Growth is influenced by HDI.

*H0: c1i = 0, rejects H0, HDI is the cause of growth change, namely,
growth, influenced by HDI*

*H0: d1i = 0, rejects H0, tourism from HDI is the cause of growth
change, that*

The data analysis model used is quantitative analysis by using
VECM. Normal VAR analysis will be carried out if there is no
cointegration. However, if it is proven that there is cointegration, then
the analysis that must be done is a Vector Error Correction Model
(VECM) analysis. To support the results obtained from the Granger
causality test and the Johansen Co-integration Test, forecasting is
carried out through Impulse Response Function (IRF) and Variance
Decompotition (VD) analysis. Previously, to avoid sharp regression, it
was necessary to do a unit root test through the Augmented Dickey-
Fuller (ADF) test [19].

RESULTS AND DISCUSSION

Tourist Visitation of Aceh Province

In general, after the earthquake / tsunami hit this province, it can
be clarified that from 2004 until the beginning of the Covid-19
pandemic, the number of international tourist arrivals can be seen in the
following graph:

Graph 1
Foreign Tourist Visits in Province of Aceh in 2004-2019
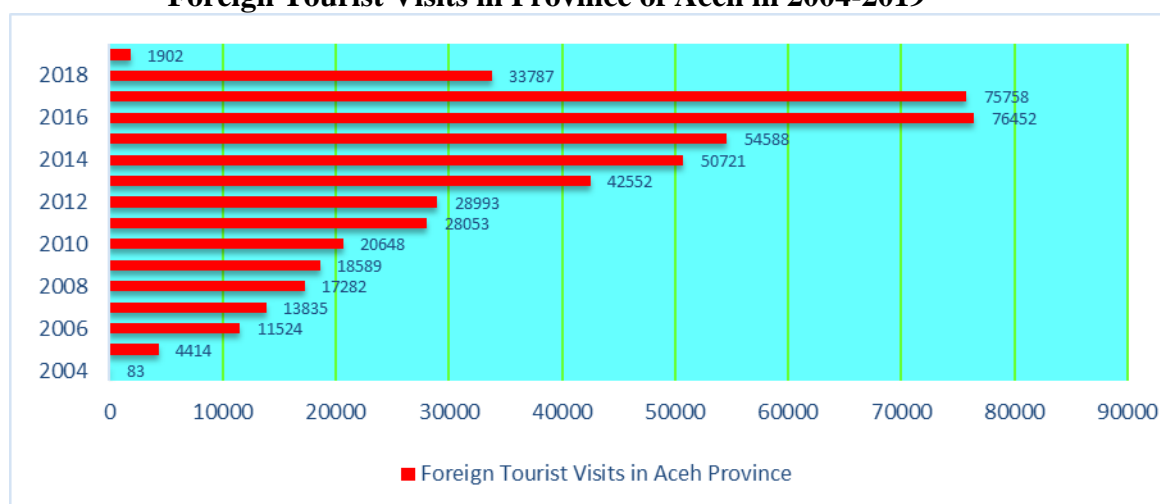
Source: Department of Tourism and Culture of Aceh Province (July 2020).

After the earthquake/tsunami struck, the number of overseas tourist
visits in 2004 was only 83. In addition, 3 (five) years later, it expanded
until 2010. In 2011-2012, where the province is currently in the
recovery and reconstruction process, it then jumped dramatically. Until

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2016, the rise in international tourists continued to happen, amounting to 76,452 individuals, most of whom came from Malaysia, England and America. In addition, there was a dramatic drop during the Covid-19 pandemic, hitting 1,902 people.

Human Development Index of Aceh Province

The index of human growth in the province of Aceh can be seen in graph 2 below:

Graph 2
Human Development Index (HDI) in Province of Aceh 2004-2019
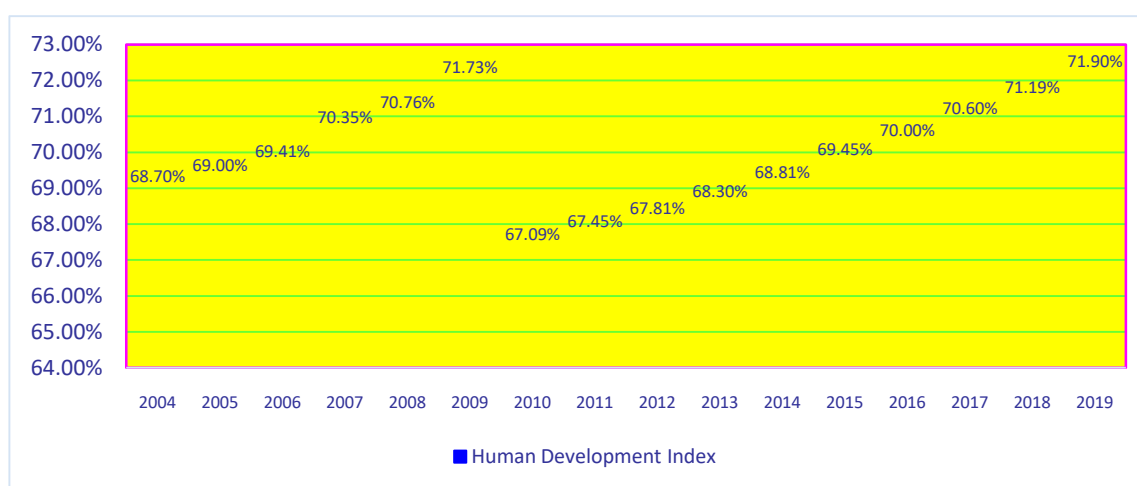
Source: Aceh Provincial Statistics Agency (July 2020).

The percentage of the human development index in 2004 is still 68.70 percent, based on graph 2 . However, since 2005, it has continued to rise following the tsunami, amounting to 69.00 percent to 70.76 percent in 2008. In addition, it continued to grow to 71.78 percent in 2009. However, it decreased sharply to hit 67.09 percent in 2010 and continued to rise steadily until 2018. In addition to government initiatives encouraging an improvement in the human development index, this increase was also attributed to the public's awareness of achieving prosperity.

Economic Growth in Aceh Province

In the period 2004-2019, economic growth in Aceh Province can be seen in graph 3 below:

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Graph 3
Economic Growth of Aceh Province 2004-2019

Source: Central Bureau of Statistics of Aceh Province (Research in July 2020).

The economic growth in Aceh Province was 1.76 percent, based on the graph above and decreased to 1.22 percent in 2005 because the earthquake / tsunami in 2004 made the economy difficult to develop. Then in 2006, it reached a high of 7.70%, at which point the Province of Aceh is in the midst of humanitarian operations, with the participation of state, national and international humanitarian institutions and staff. This institution underwent phases of refugee handling, food distribution, social services, and temporary shelter construction in 2006. In addition, it deteriorated significantly in 2008 because most of the services ended. Then, with the livelihood scheme, development of permanent housing, construction of public services such as schools, hospitals and so on, this province started to increase in 2010. Finally, in 2013-2018, this economic growth returned to normal and suffered a drop in 2019, one of which was due to the pandemic of Covod-19.

Discussion Spesifikasi, Estimasi dan Pemeriksaan Model

Stationarity Check Root Test Unit

The stationary test results obtained can be listed in Table 4.1 below, based on data processing. The value of the stationary economic growth on the lever, with a probability value of 0.00, the index value of the stationary human development, with a probability value of 0.0123, and the index value of the stationary human development, with a probability value of 0.0031, with a probability value of 0.0031. The test results below are listed in the following table.

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| Variabel | Nilai ADF Statistik | Nilai Kritis MacKinnon | | | Pro | Keterangan |
		1%	5%	10%		
Growth	-10,48158	-4,004425	-3,098896	-2,690439	0.0000	Stasioner pada lever
IPM	-3,88770	-4,004425	-3,098896	-2,690439	0.0123	Stasioner pada Differensi I
Pariwisata	-4,85610	-4,121990	-3,144920	-2,713751	0.0031	Stasioner pada Differensi II

Lag Kriteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-207.7258	NA	2.38e+09	30.10369	30.24063	30.09101
1	-195.2859	17.77133	1.53e+09	29.61227	30.16003	29.56156
2	-173.1744	22.11144*	3.01e+08*	27.73921*	28.69779*	27.65047*

Two of the lag parameters can be taken from the test results in table 4.2
above, with an asterisk on the LR, FPE, AIC, SC and HQ values.

Uji Kointegrasi

Johansen Cointegration Test results between growth, HDI and tourism

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	00.05 Critical Value	Prob.**
None	0.733248	2.340.193	4.291.525	0.8622
At most 1	0.223717	6.223.253	2.587.211	0.9978
At most 2	0.201862	2.931.165	1.251.798	0.8846

The value of the Trace Statistic from the Trace test is 2,340,193
lower than the critical value of 4.291.525 at alpha 0.05, which
means there is not one co-integrated equation in the system. The
value of the Trace Statistic is 6,223,253, which is greater than
the critical value of 2,587,211 at alpha 0.05, implying that at
least one co-integrated equation exists. Then, the value of the
Trace Statistic is 2,931,165 from the At most 2 test, which is
greater than the critical value of 0.05, which is 1,251,798,
implying that there is one cointegrated equation in the system.

VECM estimation results between growth, HDI and tourism

Error Correction:	D(GROWTH)	D(HDI)	D(tourism)
CointEq1	-0.401796	-0.208731	-3.575.445
	[-2.49149]	[-0.85432]	[-1.38844]
D(GROWTH(-2))	-0.502754	0.365653	802.1293
	[-4.75740]	[2.28384]	[0.47534]
D(IPM(-2))	0.096870	0.092432	1201.345
	(0.18589)	(0.28163)	(2968.35)
	[0.52111]	[0.32820]	[0.40472]

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D(tourism(-2))	4.00E-06	1.87E-05	-1.231.641
	[0.09249]	[0.28625]	[-1.78464]

Forecast Error Decomposition Variance (FEDV) Analysis
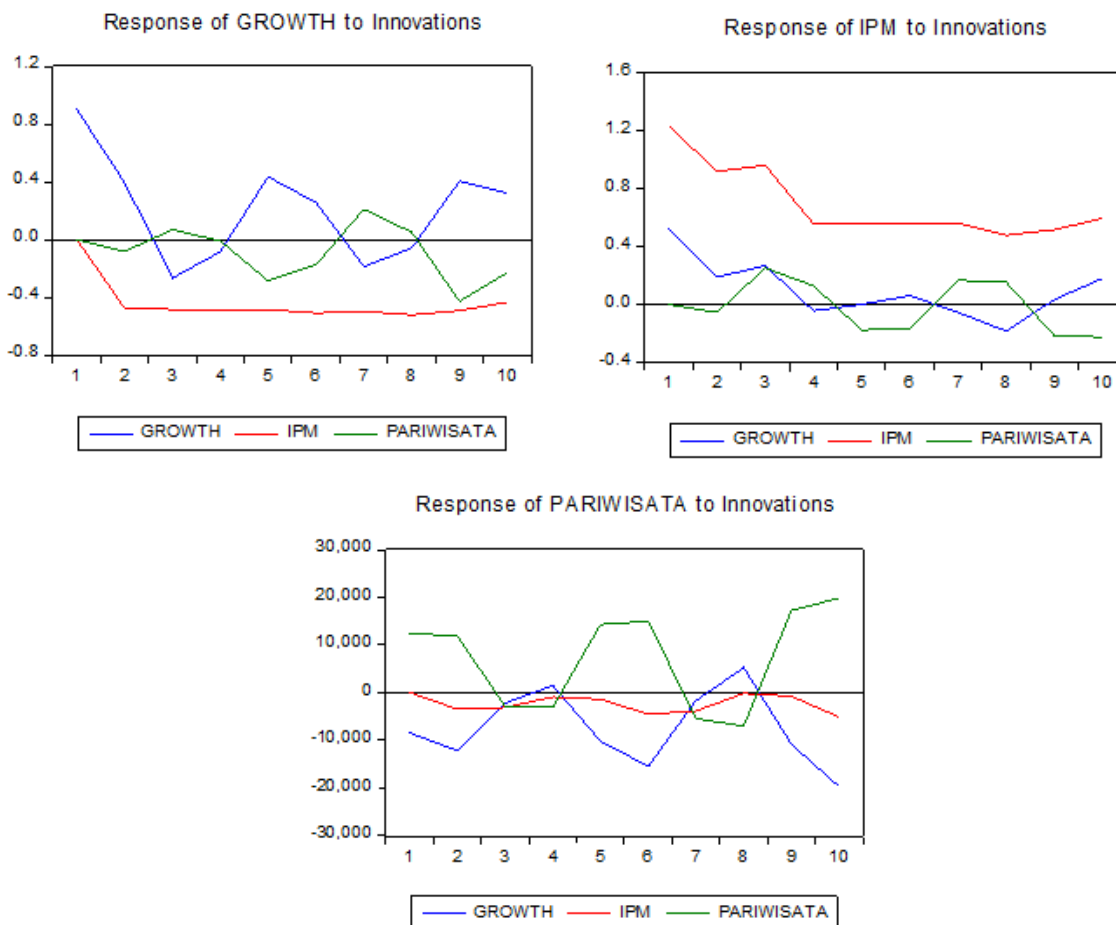
The contribution of changes in economic growth in Aceh Province itself variable in the second year to clarify the conduct of changes in HDI and tourism decreased by 80.58 percent to 38.65 percent until the 10th year. HDI and tourism were unable to influence economic growth in the first period, but economic growth was influenced by HDI and tourism during the second to tenth centuries. The economic growth relationship between the HDI and tourism variables is positive. In the second year, the variable itself in describing the actions of changes in HDI and tourism decreased by 80.58 percent to 38.65 percent until the 10th year, the contribution of changes in economic growth in Aceh Province. HDI and tourism were unable to affect economic growth in the first period, but HDI and the tourism sector affected 18.85 and 0.57 respectively in the second period and continued to increase until 51,599 and 9.75 affected economic growth in the tenth period. The economic growth relationship between the HDI and tourism variables is positive. Compared to the tourism sector, HDI has a greater impact on economic growth, as can be seen in the production of Table 4.1 below:

Tabel 4.1

Period	S.E.	GROWTH	IPM	PARIWISATA
1	0.902572	100.0000	0.000000	0.000000
2	1.097576	80.57972	18.85027	0.570010
3	1.231358	68.78136	30.45495	0.763694
4	1.326779	59.65468	39.68114	0.664183
5	1.506407	54.64251	41.22936	4.128135
6	1.620157	49.72730	45.53885	4.733846
7	1.718552	45.39036	48.91344	5.696198
8	1.798071	41.57205	53.14051	5.287435
9	1.955011	39.44771	51.31061	9.241678
10	2.041525	38.64857	51.59920	9.752224

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Variance Decomposition of GROWTH

Analisis Impulse Response Function (IRF)

Response of GROWTH to Innovations

Response of IPM to Innovations

Response of PARIWISATA to Innovations
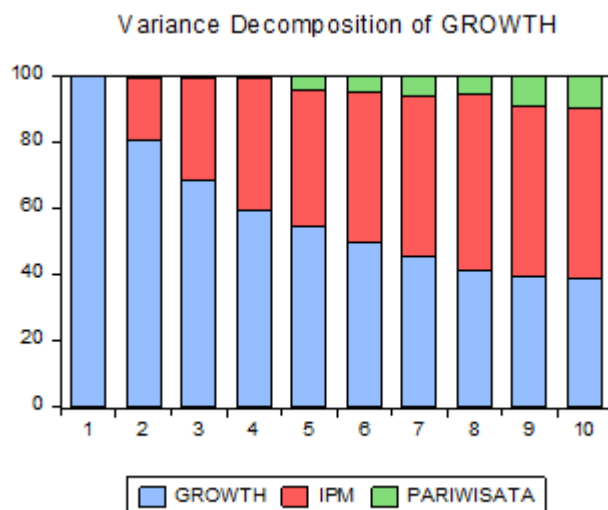
Analisis Impulse Response Function (IRF)

To determine how the shock of a variable influences the variable itself and other variables in the system, IRF analysis is needed. An overview of the IRF's response to economic growth indicates that economic growth, which tends to fluctuate until the tenth year, will be the best response in the next 10 years. HDI and tourism are the next top answers.

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The analysis of the highest HDI IRF is influenced by itself and starts to stabilize in the fourth year, so tourism and economic growth are influencing the HDI response. In addition, the IRF 's reaction to tourism is most influenced by itself and tends to fluctuate until the tenth year, and is subsequently affected by economic growth and HDI variables.

V.Conclusions

Based on the results of the Granger-Causality analysis test assisted by the IRF and VD analysis, the relationship between the three variables can be described as follows: HDI has a direct effect on economic growth, where an increase in HDI would have a direct effect on increasing the value of economic growthTourism also has a direct influence on economic development, with the growth of tourism enhancing economic growth. While tourism and HDI both have a direct impact, the addition of tourism also affects HDI, and HDI is also decreased by a decline in tourism. In the IRF tourism test, it is shown that tourism is influenced by variable economic growth, but the HDI does not affect tourism.

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