The Relation Between Invesment And Literacy Rate On Economic Growth In Indonesia From 1998 To 2022

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Abstract

Constant economic growth is growth that is bolstered by investments. Economic growth will be impacted by the rise in the average length of education indicated by a high literacy rate (AMH). This is why the purpose of this study is to investigate the relationship between economic growth, investment, and literacy rates. To observe changes in any variable, such as Indonesia's GDP, investment, and literacy rate (AMH) from 1998 to 2022, descriptive analytic techniques are employed. The study of the Vector Error Correction Model (VECM) is the inference method used to determine the link between the variables that are represented by economic growth indicators. The variables employed in this study include the growth of the GDP, which serves as an indication of economic growth, investment (I), and the literacy rate (AMH), which serves as an indicator of education level. The examination of the VECM equation leads to the conclusion that the GDP indicator, which measures Indonesia's economic growth, positively correlates with the amount of investment and literacy rates. According to IRF and FEVD research, economic growth responds to shocks that affect it or the other three variables by fluctuating at the start of the period and reaching an equilibrium point at various points in time. This implies that shocks to the average investment level will no longer have an impact on economic growth after the fourth period. In the tenth period, the amount of investment will start to decline as a reaction to shocks resulting from either economic growth or from itself. This implies that beyond the tenth period, the quantity of investment or shocks to economic growth won't have a significant impact on each other. In the second stage, the amount of investment will start to decline in reaction to shocks caused by the average literacy rate. This implies that shocks to the average literacy rate will not significantly affect the amount invested after the second term.

Keywords: Growth Domestic Product, Invesment, Literacy Rate
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Introduction

In the context of economic expansion, Indonesia has seen a number of noteworthy trends over the past 25 years. The crucial period spanning from 1998 to 2022 encompasses the post-monetary crisis recovery phase as well as the quickly emerging digital and globalisation era. Investment and literacy rates are two variables that are frequently linked to economic growth. One of the key factors in determining a nation's Gross Domestic Product (GDP) is investment. Since the economic changes implemented in the wake of the 1998 crisis, investment in Indonesia has been trending positively. Growing foreign and local investment has been a major factor in economic expansion. Investment is important for the development of infrastructure as well as for

raising production levels and generating employment, both of which raise income levels and stimulate demand from the general public.

As a result, these two elements work in tandem to support Indonesia's sustained economic growth. An influential time in Indonesia's economic history occurred between 1998 and 2022, during which time investment and literacy served as the country's two primary engines of economic growth. Both elements have helped provide a solid basis for Indonesia's economic future, one that is more promising and inclusive. Indonesia should aspire to greater and more equal economic growth in the future by keeping up its investment and literacy initiatives. Through the addition of gross fixed capital formation (GFCF) and the realisation of investments that reached considerable levels in 2022, investment both domestic and foreign acts as an engine of the economy.

Economic growth that is sustained by investment is called continuous growth. Investment-supported economic growth should be able to boost production capacity, which will then support further economic expansion. Investing is the endeavour to release funds or expenses now with the hope of reaping rewards later on. Since investment is one of the variables that make up national income, the market goods equilibrium theory put forward by Keynes predicts that an increase in investment will result in a rise in national income (Pangestin et al., 2021). This contradicts in part the research results of Astuti (2018), where the regression analysis of the Domestic Direct Investment (DDI) variable indicated a negligible impact on economic growth. Constant economic growth is growth that is bolstered by investments. It is anticipated that investment-driven economic growth will be able to boost production capacity and thereby promote further economic expansion. Investment, or the attempt to releast, is important for boosting Indonesia's economic expansion. Since DDI is frequently used off-target for development, it cannot spur economic growth and instead suggests that domestic investors are still hesitant to put their money into projects.

Since education is a measure of a nation's general population performance, it is one of the key indicators that influences the success of national development. Enhancing the standard of education within a community will boost a nation's economic expansion. According to Boediono (2008), economic growth is the long-term process of raising per capita production. Economic growth is the process needed to raise real national income, which is required to raise everyone's standard of living (Boediono, 2008). A nation's economic growth is influenced by a number of factors, including the quantity and calibre of its human resources. According to Handayani, Bendesa, and Yuliarmi (2016) as well as Hepi and Zakiah (2018), the rise in the average length of schooling will have an impact on economic growth in addition to education funding. This is a result of the average length of education being able to raise the standard of instruction in the area. The percentage of people over 15 who can read a short sentence is known as the literacy rate, and it is one measure of a region's or nation's educational performance. This contradicts the findings of Yusuf et al.'s 2022 study, which shown that economic growth is unaffected by the variables representing average schooling duration (ASD) and the Human Development Index (HDI). In the meantime, the factors Higher Education Enrollment (HEE) and Real Lending Rate (RLR) significantly boost economic growth.

The researcher hopes to carry out additional research to ascertain the connection between Economic Growth, Investment, and Literacy Rates based on the previously mentioned earlier studies.

Literature Review

The GDP's historical performance has a major bearing on its current GDP (Zubair, Samad, & Dankumo, 2020). The basis for the current economic growth can be laid by economic development, investments, and government policies from earlier eras. Furthermore, ties between the past and present are facilitated by elements like commercial linkages, technological advancement, and political stability. We can spot trends, foresee dangers, and formulate strategic plans for the future by studying economic history.

The Literacy Rate is significantly impacted by the Gross Domestic Product (GDP) (Nithya, Ragini, & Preetha, 2024). Opportunities for education and literacy rise in tandem with a nation's economic growth. The improvement of the literacy rate is attributed to investments in education, programmes aimed at eradicating literacy, and increased recognition of the value of education. On the other hand, disparities in income distribution or economic instability may have an impact on the literacy rate and accessibility to schooling. As a result, policies pertaining to education and the economy are intertwined and have the power to improve society's future.

Investment in a nation is greatly influenced by its GDP (Gross Domestic Product) (Fatmawati, 2022). Macroeconomic indicators like GDP show how much a nation has created overall during a given time period in terms of goods and services. An expanding and robust economy is indicated by a rising GDP, which draws in investors. On the other hand, a decline in GDP may signal a slowdown in the economy and a fall in investment. As a result, in a nation's economy, GDP and investment are linked and have an impact on one another.

The current rate of literacy has been greatly impacted by the past rate (Ansari, Albarrak, Sherfudeen, & Aman, 2023). The population's reading and writing skills are reflected in the literacy rate, which is a key measure of an education level in a nation. A high historical literacy rate suggests that the nation has a solid educational foundation, which is likely to endure and have a favourable effect on the current rate of literacy. On the other hand, a low literacy rate in the past may point to problems with the educational system that could still exist now and have an impact on the rate of literacy today. Because of this, historical and contemporary literacy rates have an impact on one another when it comes to a nation's educational system.

A nation's Gross Domestic Product (GDP) is significantly impacted by its literacy rate (Younis & Younas, 2024). One key measure of the calibre of a nation's human resources is its literacy rate, which is the proportion of the populace that is literate. A workforce that is highly trained and productive is typically found in nations with high literacy rates, and this can boost GDP by increasing economic production and productivity. On the other hand, developing nations with low literacy rates may find it difficult to boost GDP and achieve sustainable economic growth. Thus, in a nation's economy, GDP and literacy rates are related and have an impact on one another.

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Current investments are significantly influenced by past investments (Raut, 2020). Investment is a crucial measure of a nation's economic health since it represents the distribution of resources

for the purpose of making profits in the future. If prior investment levels were high, this suggests that the nation enjoyed a favourable investment climate, which is probably going to hold true and benefit present investments. On the other hand, low returns on previous investments may point to problems with the current investing environment, which could have an impact on current returns. As a result, investments made in the past and present have an impact on one another's economies.

A nation's Gross Domestic Product (GDP) is greatly impacted by investment (Sijabat, 2023). An essential part of GDP is investment, which represents the distribution of resources for potential profit. A nation's production capacity can be increased through investments in the form of buying machinery, real estate, or other capital goods, which can raise GDP and economic output. On the other hand, a decline in investment may be a sign of a slowing economy and lower GDP. As a result, in a nation's economy, GDP and investment are related to one another.

A nation's literacy rate is greatly influenced by its level of investment (Jiang, Nuţă, & Zamfir, 2023). By providing the resources required for education, such as teachers, books, and schools, investment, particularly in the field of education, can raise literacy rates. Investments in education can also go towards skill development and training programmes that aid in the acquisition of reading and writing skills. On the other hand, a decrease in educational funding may impede the rise in literacy rates. Thus, in the context of a nation's education, investment and literacy rates are linked and have an impact on one another.

H1: Past GDP influences current GDP
H2: GDP influences Literacy Rates
H3: GDP influences Investment
H4: Past Literacy Rates influence current Literacy Rates
H5: Literacy Rates influence GDP
H6: Literacy Rates influence Investment
H7: Past Investment influences current Investment
H8: Investment influences GDP
H9: Investment influences Literacy Rates

Research Methods

This study employs descriptive and inferential analysis methods. Descriptive analysis is used to observe the trends of each variable, including economic growth indicators (GDP), Investment (I), and Literacy Rates (AMH) in Indonesia from 1998 to 2022. Meanwhile, the inferential analysis utilized is the Vector Error Correction Model (VECM) to examine the relationships between variables represented by economic growth indicators.

The variables used in this research are the growth of Gross Domestic Product (GDP) to represent economic growth indicators, Investment (I), and Literacy Rates (AMH) to represent education level indicators. The data source used in this research is secondary data, obtained from the World Bank. The collected data consists of annual data from 1998 to 2022, thus forming a time series. The application program used in the data processing stage is Eviews 12.

Table 1. Variable Description

Variable	Description	Calculation Unit
GDP	Gross Domestic Product (GDP) measures the total value of all goods and services produced within a country over a specific period. It includes consumption, investment, government expenditure, and net exports.	Dollar (USD) or local currency.

AMH	The average monthly income received by households. This includes salaries, income from businesses, and other sources of income.	Dollar (USD) or local currency.
Invesment (I)	Total investment in the economy, including investment in infrastructure, equipment, and business projects.	Dollar (USD) or local currency.

$\Delta GDP_t = \alpha_1 \Delta \text{GDP}_{t-1} + \beta 1 \Delta \text{AMH}_{t-1} + \gamma 1 \Delta \text{Investasi}_{t-1} + \epsilon_{1t}$
$\Delta AMH_t = \alpha_2 \Delta \text{GDP}_{t-1} + \beta 2 \Delta \text{AMH}_{t-1} + \gamma 2 \Delta \text{Investasi}_{t-1} + \epsilon_{2t}$
$\Delta Investasi_t = \alpha_3 \Delta \text{GDP}_{t-1} + \beta 3 \Delta \text{AMH}_{t-1} + \gamma 3 \Delta \text{Investasi}_{t-1} + \epsilon_{3t}$
Where,
Δ : Indicates the change (differencing) in the variable.
T : Time
αi, βi, dan γi : Model coefficients.
ϵit : Error term at time *t*

The Vector Error Correction Model (VECM) analysis method was first popularized by Engle and Granger to correct short-term imbalances towards the long term. Thus, VECM can be used to examine the short-term and long-term relationships of time series data. VECM is a Vector Auto Regression (VAR) analysis designed for use with non-stationary data known to have a cointegration relationship; in other words, VECM can be considered a restricted form of VAR (Hutabarat, 2017).
Firstly, we conduct a stationarity test by applying the Unit Root Test, starting from the level, first difference, and so on. Once the data passes the stationarity test, we can proceed to the next stage. The next stage is determining the optimal lag. We use several criteria in this determination, namely the Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), Final Prediction Error (FPE), and Hannan-Quinn Information Criterion (HQ). After finding the optimal lag, we can move on to the next stage. The next stage is checking for stability. We use the AR Roots Table for this check. Once stability is achieved, we can proceed to the next stage. The following stage is conducting a cointegration test by applying the Johansen cointegration test. If cointegration is present, then the data can be processed using the VECM analysis method. After the cointegration test is completed, we can move on to the next stage. The next stage is conducting a model feasibility test using the Portmanteau residual test. After the model feasibility test is completed, we can proceed to the next stage. The final stage is conducting a causality test by applying the Granger Causality Test to observe the causal relationships between variables. Then, we examine the results from the Impulse Response Function (IRF), which aims to see the response of related variables in the VAR system to shocks in the error terms (Gujarati, 2004). Additionally, we use Forecast Error Variance Decomposition (FEVD) to observe the extent of each variable's influence through the estimation of error variance. Thus, the data analysis process is complete.

Results And Discussion

Stationary Data

This research utilizes the Vector Error Correction Model (VECM) analysis to examine the relationship between investment, literacy rates, and economic growth (GDP) in Indonesia. The VECM analysis, as a type of inferential analysis method, begins with a Unit Root Test, which aims to determine whether the data used is stationary or not and at what level of stationarity

(level, first difference, or second difference). This is necessary because one of the prerequisites for applying VECM analysis is that the data must be stationary.

The root test used in this study is the Levin, Lin & Chu test, with the null hypothesis being the presence of a unit root (non-stationary). The results, as shown in Table 1, indicate a unit root test statistic value of -864371 (p-value < 0.05), leading to the conclusion that the data does not have a unit root (is stationary) at the first difference level.

Table 1. Unit root test output at the first difference level

Method	**Statistic**	**Prob ****	**Cross-section**	**Obs**
Null : Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.64371	0.0000	3	68

Source : Eviews 12 (Processed Data)

Lag Optimum

After the data is stationary, the next step is to find the optimal lag using the Akaike Information Criterion (AIC). The results can be seen in Table 2. Table 2 indicates that the optimal lag condition is at lag 3. The optimal lag condition can be determined by looking at the number of stars for each criterion in the table. In determining the selection of lag/slackness required in the application of the model to observe the relationships and behavior of each variable in the system. Choosing a lag that is too small will impact the model's inability to interpret the relationships between variables. Meanwhile, setting a lag that is too large will affect the inefficiency of the model's explanation..

Table 2. Optimum Lag Search

Lag	AIC
0	8.485616
1	8.685612
2	8.832326
3	8.293389*

*Indicates the order in which the orde was selected based on the AIC

Source : Eviews 12 (Processed Data)

Stability Test.

The next step involves using a stability test. This test ensures that forecasting can be performed within the VECM model using IRF and FEVD. Additionally, the use of an unstable model can be observed in Table 3. The stability test results with first difference lag 3 conditions show that the VAR model is stable, which is evident by the overall modulus values being less than 1, with none exceeding 1.

Table 3. Stability Test Results

Root	Modulus
-0.323006 – 0.831363i	0.891907
-0.323006 + 0.8311363i	0.891907
-0.664460 – 0.583666i	0.884405
-0.664460 + 0.583666i	0.884405
-0.208931 – 0.679112i	0.710525
-0.208931 + 0.679112i	0.710525
0.612262 – 0.133963i	0.626746
0.612262 + 0.133963i	0.626746
-0.201195	0.201195

Source : Eviews 12 (Processed Data)

Cointegration Test.

Cointegration testing is conducted to determine the model usage, choosing between the VAR model or the VECM model. This test is performed to observe the presence of long-term equilibrium characterized by similar movements and stable relationships among variables. Using the Johansen Cointegration Test (JCT), the results obtained in Table 4 show that the probability value is less than 5%, which implies that there is cointegration among the variables. From the cointegration test results, the VECM model analysis can be continued.

Table 4. Cointegration Test Output

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob. **
None *	0.826241	46.58758	29.79707	0.0003
At most 1	0322437	9.835780	15.49471	0.2936
At most 2	0.076069	1.661468	3.841465	0.1974

Trace test indicate 1 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haung-Michelis (1999) p-values
Source : Eviews 12 (Processed Data)

VECM Model.

The obtained VECM model must be tested for model feasibility (Portmanteau residual test). The processing results indicate that there is no autocorrelation of residuals in the model, thus the model is deemed suitable. The long-term VECM equation that is formed consists of two equations, which are as follows:

D(GDP) = -2.189096*(GDP(-1) – 1.078773*I(-1) – 1065953*AMH(-1))..... (1)

D(I) = -2.731087*D(I(-2) – 1.284030*I(-3))..... (2)

Causality Test.

By examining the causality test results in Table 5, if the probability value is less than 0.05, it is concluded that causality occurs, but if the probability value is greater than 0.05, it is concluded that there is no causality for that variable.

Table 5. Granger causality test output

Null Hypothesis	Obs	F-Statistic	Prob.
I does not Granger Cause GDP	22	0.24644	0.8628
GDP does not Granger Cause AMH		1.95072	0.1648
AMH does not Granger Cause GDP	22	0.94067	0.4456
GDP does not Granger Cause AMH		0.46724	0.7095
AMH does not Granger Cause I	22	0.40538	0.7513
I does not Granger Cause AMH		0.64124	0.6002

Source : Eviews 12 (Processed Data)

The results of the Granger causality test processing, as shown in Table 3, indicate that there are no variables with a causal relationship. This is demonstrated by all p-value scores being greater than 0.05.

VECM Model Estimation

Table 6. Short-Term VECM Estimation Results

Error Correction	D(GDP,2)	D(I,2)	D(AMH,2)
	-2.189096	0.630143	0.124927
CointEq1	(0.81322)	(0.40628)	(0.25283)
	[-2.69188]	[1.55099]	[0.49411]
	0.782538	-0.689024	-0.085351
D(GDP(-1),2)	(0.70366)	(0.35155)	(0.21877)
	[1.11210]	[-1.95999]	[-0.39015]
	-0.086995	-0.605591	0.008049
D(GDP(-2),2)	(0.60110)	(0.30031)	(0.18688)
	[-0.14473]	[-2.01656]	[0.00577]
	-0.145725	0.073439	0.008049
D(GDP(-3),2	(0.30570)	(015273)	(0.09504)
	[-0.47669]	[0.48085]	[0.08469]
	-2.731087	-0.458485	0.016369
D(I(-1),2	(0.92612)	(0.46269)	(0.28793)
	[-2.94895]	[-0.99092]	[0.05685]
	-1.680189	-0.288482	0.082390
D(I(-2),2)	(0.95913	(0.47918)	(0.29820)
	[-1.75178]	[-0.60203]	[0.27630]
	-1.284030	0.084108	0.006133
D(I(-3),2)	(0.57265)	(0.28610)	(0.17804)
	[-2.24224]	[0.29399]	[0.03445]
	-1.388582	-0.298667	-0.801060
D(AMH(-1),2)	(1.78707)	(0.89282)	(0.55560)
	[-0.77702]	[-0.33452]	[-1.44179]
	-1.664486	0.326981	-0.540804
D(AMH(-2),2)	(2.16665)	(1.08245)	(0.67362)
	[-0.76823]	[0.30207]	[-0.80284]
	-0.014370	0.626061	-0.031662
D(AMH(-3),2)	(1.47292)	(0.72587)	(0.45793)
	[-0.00976]	[0.85078]	[-0.06914]
	-0.252355	-0.148452	0.007811
C	(0.50647)	(0.25303)	(0.15746)
	[-0.49826]	[-0.58669]	[0.04961]
R-squared	0.851551	0.816469	0.674303

Source : Eviews 12 (Processed Data)

** to determine the significance of the relationship between variables in the VECM model, researchers compare the t-table value with the t-statistic value. If the t-statistic value is greater than the t-table value, then the relationship is significant.*

** The t-table value with a significance level of 0.05 and degrees of freedom -1 is 2.07387*

Based on Table 6, we can understand in the short term:

According to Table 6, it can be seen that the relationship between GDP and GDP is significantly positive, as the coefficient value of 0.782538 is smaller than the t-statistic value of 1.11210. Secondly, there is an insignificant negative relationship between the GDP variable and

Investment because the coefficient value of -0.689024 is smaller than -1.95999. The relationship between GDP and AMH is significantly negative with a coefficient of -0.085351 and a t-statistic of -0.39015.

An important relationship can also be established by considering the comparison of coefficient values and t-statistics. This comparison is indicated when the t-statistic value of a variable exceeds the coefficient value and can be interpreted as a significant relationship. From Table 6, the coefficient value of -1.284030 is smaller than the t-statistic value of -2.24224, which explains a significantly positive relationship between Investment (I) and GDP. The relationship between Investment (I) with Investment (I) and Investment (I) with AMH also has a significantly positive relationship.

The relationship between AMH and GDP is significantly negative with a coefficient of -0.014370 and a t-statistic of -0.00976. Similarly, the relationship between AMH and Investment (I) and the relationship between AMH with AMH have a significantly positive relationship.

Based on Table 6, we can know in the short term:

The change in GDP (-1) from one quarter ago significantly affects Investment (I) and AMH in the current quarter, with t-statistic values of [-1.95999] and [-0.39015] smaller than the table value of 2.007387. For Investment (I) (-1) from one quarter ago, it significantly affects GDP, Investment (I), and AMH in the current quarter, with t-statistic values of [-2.94895], [-0.99092], and [0.05685] larger than the table value of 2.007387.

Table 7. Long-Term Estimation Results

Cointegrating Eq:	CointEq1
D(GDP(-1))	1.000000
	-1.078773
D(I(-1))	(0.27842)
	[-3.87467]
	-1.065953
D(AMH(-1))	(0.77481)
	[-1.37576]
C	0.514359

** If the t-statistic value is greater than the t-table value, then the relationship is significant.*

** The t-table value with a significance level of 0.05 and degrees of freedom 1 is 2.07387*

Source : Eviews 12 (Processed Data)

Based on Table 7, the long-term VECM estimation results show that Investment (I) and Literacy Rates (AMH) have a significantly negative effect on Economic Growth (GDP). This can be proven by the t-statistic values of [-3.87467] and [-1.37576] respectively, which are greater than the t-table value of 2.07387, meaning that when there is a change in Investment (I) at lag 3, it will cause a change in Economic Growth in the long term.

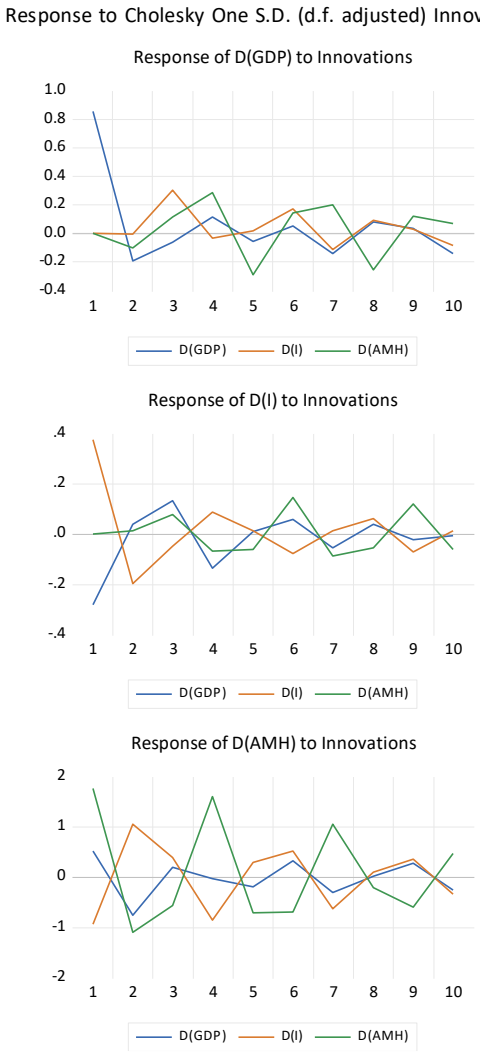

Figure 1. Impluse Response Function (IRF) graph between AHM, I, and GDP

The processing results in the form of 3 combined graphs, as shown above, provide a visual representation of the response of a variable over the next 10 periods due to a shock of 1 standard deviation, whether from itself or another variable. Based on Figure 1, the economic growth response shows fluctuations, peaking at period 2 and then gradually declining with some oscillations. The Investment response is more volatile with significant peaks and troughs, indicating a sensitive reaction to innovation. For Literacy Rates, there is a steady increase until period 5 before it stabilizes. Figure 2 shows that all three variables exhibit an initial spike followed by a decline and subsequent oscillation, indicating their dynamic interrelated response to shocks in the system. Figure 3 shows that while Economic Growth (GDP) remains relatively stable in response to innovation, both Investment (I) and Literacy Rates (AMH) exhibit clear volatility.

Table 8. FEVD for GDP Variable

Periode	S.E.	D(GDP)	D(I)	D(AMH)
1	2.024743	100.0000	0.000000	0.000000

2	2.614921	95.98100	2.233937	1.785063
3	2.741257	88.47891	9.792579	1.728507
4	2.959675	90.09354	8.420474	1.485981
5	3.005962	88.95177	8.175366	2.872869
6	3.081437	89.08565	7.843005	3.071341
7	3.413075	90.01899	6.990390	2.990617
8	3.594560	87.72723	8.983268	3.289501
9	3.690184	87.83006	8.539904	3.630035
10	3.756890	87.47533	8.327446	4.197226

Source : Eviews 12 (Processed Data)

The subsequent analysis involves examining the Forecast Error Variance Decomposition (FEVD), as indicated in Tables 9. Table 8 displays the FEVD values over 10 periods for the economic growth variable (GDP). In the short term, for instance, in period 3, it is observed that shocks to itself cause 88.47% of the fluctuations in economic growth. However, in the long term, such as in period 10, the fluctuations caused by the economic growth shocks themselves gradually decrease (to 87.47%), while the percentage of economic growth fluctuations caused by shocks from the other two variables begins to increase.

Table 9. FEVD for Invesment (I) Variable

Periode	S.E.	D(GDP)	D(I)	D(AMH)
1	1.011557	60.60152	39.39848	0.000000
2	1.102099	55.77657	33.62504	10.59839
3	1.136535	53.28631	32.40786	14.30583
4	1.087759	81.10832	13.02560	5.866077
5	1.956198	83.23671	11.12416	5.639131
6	2.062574	77.66083	17.22352	5.115655
7	2.170265	79.34221	15.68379	4.972994
8	2.274516	79.07407	16.33943	4.586500
9	2.350990	79.49502	15.31032	5.194651
10	2.515129	81.86779	13.38361	4.748600

Source : Eviews 12 (Processed Data)

Furthermore, Table 9 displays the FEVD values over 10 periods for the Investment (I) variable. In the short term, for example, in period 3, it is observed that shocks to economic growth cause 53.28% of the fluctuations in the amount of investment. In the long term, such as in period 10, the fluctuations caused by economic growth shocks begin to increase to 81.86%, however, this is lower compared to the fluctuations caused by shocks to itself (13.38%).

Table 10. FEVD for Literacy Rate (AMH) Variable

Periode	S.E.	D(GDP)	D(I)	D(AMH)
1	0.629496	58.60405	6.895799	34.50015
2	0.637392	57.65517	8.548548	33.79628
3	0.656538	54.35681	8.277687	37.36551
4	0.830980	62.75842	9.241117	28.00046
5	0.878444	64.63897	8.302169	27.05886
6	0906257	63.90797	8.162234	27.92979
7	1.021245	66.48897	9.285072	24.22596
8	1.041224	65.87241	8.932643	25.19495
9	1.076375	64.31673	10.50628	2517699
10	1.117653	64.08989	9.828520	26.08159

Source : Eviews 12 (Processed Data)

Table 10 displays the Forecast Error Variance Decomposition (FEVD) values over a 10-period span for the Literacy Rate (AMH) variable. In the short term, for example, in period 3, it is observed that shocks to economic growth cause 54.35% of the fluctuations in literacy rates. In the long term, such as in period 10, the fluctuations caused by economic growth shocks begin to increase to 64.08%, yet they are smaller compared to the fluctuations caused by shocks to itself (26.08%) or the amount of investment (9.82%).

Conclusions

GDP has a significant positive impact on Investment, but an insignificant negative impact on the Literacy Rate. Investment significantly positively affects both GDP and the Literacy Rate. The Literacy Rate, however, has a significant negative effect on GDP but a positive effect on Investment, In the short term. In the long term, both Investment and Literacy Rate have a significant negative impact on Economic Growth. Furthermore, the Granger causality test indicates that there is no causal relationship between the variables. This is evidenced by all p-value scores being greater than the standard significance level. Therefore, it can be concluded that while these variables interact with each other, they do not cause changes in each other within the scope of this study.

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