

ANALYSIS OF FACTORS AFFECTING INVESTMENT IN INDONESIA

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Abstract: *This study aims to determine the factors that influence investment in Indonesia which is influenced by its effects caused by inflation, interest rates, exchange rates and labor, where the data used is time series data with the OLS method and shows the results that the results of multiple regression analysis show that (1) a significant effect of inflation on investment in Indonesia (2) interest rates have a significant effect on investment in Indonesia (3) the exchange rate has a significant effect on investment in Indonesia (4) labor has a significant effect on investment in Indonesia.*

Keywords: *Investment, Inflation, Interest Rate, Exchange Rate and Labor.*

1. Introduction

Investment for developing countries is development capital, which through investment is expected to spur the economic development of developing countries into developed countries. Economic development itself for a country requires financing that is not only sourced from domestic savings, but also must obtain foreign or domestic investment assistance. There are several factors that affect investment that are not relevant to the existing theory or phenomenon (Qahfi, 2018).

This high or low investment can be caused by fluctuations in monetary policy such as inflation, interest rates, exchange rates and labor. The problem that often occurs in developing countries, including Indonesia, especially in economic development is limited funding. This means that the state needs a relatively large amount of funds to carry out its national development as a way to catch up with the development of developed countries while the country has not been able to provide its own development funds. Potential sources of financing for the state, including investment.

An economy must have investment spending that can spur an increase or decrease in the economy of a region, because this investment can increase employment and production opportunities. The problem faced by investment in Indonesia is the high value of investment but has problems, namely the difficulty of licensing which can later affect changes in incoming capital investment and a policy on the use of human resources is needed considering that there are quite a lot of workers in Indonesia so it needs to be prioritized compared to technological advances (Juliannisa, 2020). Investment developments from 2013-2019 can be seen in figure 1.

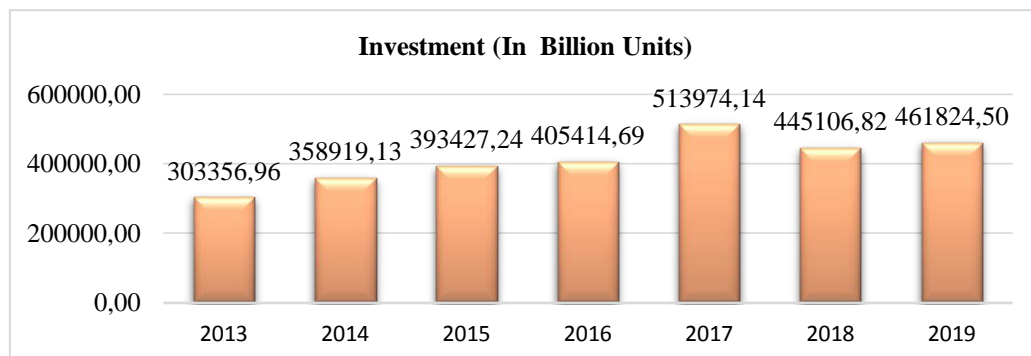


Figure 1. Investment Development in Indonesia 2013-2019

Source: Investment Coordinating Board, 2020.

Based on Figure 1, the development of investment fluctuates every year. From 2013 to 2017 the amount of investment increased. The year 2017 was the largest year that experienced an increase in investment growth in Indonesia, this was due to the form of business that began to shift towards the digital sector, as well as the business sectors of interest, namely electricity, gas and water followed by mining. In 2017 to 2018 the amount of investment decreased this was due to the effect of tightening monetary policy in the United States, so that the outflow of funds from emerging countries to developed countries also resulted in the weakening of the currency exchange rates of developing countries. (Investment Coordination Agency | BKPM, 2018).

Based on the introduction above, we will conduct a more specific study on the analysis of factors that influence investment in Indonesia, supported by several studies that try to see the effect of Inflation, Interest Rates, Exchange Rates and Labor on Investment, by focusing on the relationship between these variables. These studies include those conducted by Dwi Hastuti Lestari and Nanang Rusliana (2013), Indri Arrafi Juliannisa (2020), Adrian Sutawijaya Zulfahmi (2013), Rauzatul Jannah and Asnawi (2019), Ni Made Krisna Marsela (2014). So that the problems that become the basis for research are as follows:

1) How are the effects of inflation, interest rates, exchange rates and labor on investment in Indonesia?

Grand Theory

Referring to Keynes, the level of investment is influenced by the interest rate, probability or expected profit. Through investment activities, it will enable the community to continue to increase their job opportunities and economic activities, besides that it will also increase national income, so that the level of community prosperity will increase. John Maynard Keynes in a book entitled *The General Theory of Employment, Interest and Money 1936*, put forward the MEC theory or marginal efficiency of capital or the concept of marginal efficiency of capital or the theory of investment demand. The definition of MEC itself is *the expected net rate of return* or the expected level of net income on additional capital expenditures. Or simply, MEC is defined as a discount rate that does not distinguish the expected future income stream from the cost of additional capital now (Keynes, 1936).

Inflation Theory

Keynes in his theory of inflation has the view that inflation occurs because people want to live beyond their economic limits. That is, the inflation process is a process of competing for results among several people who want to have a larger share than what the community can provide. So that in the end the struggle process is realized as a condition where public demand for goods always exceeds the availability of goods or the emergence of an *inflationary gap* phenomenon (Aprileven, 2015).

High inflation in a country causes the money supply to increase, followed by high interest rates, interest rates are a factor that determines the size of investment made by the public (private). Lower interest rates will increase investment demand. High interest rates can be a barrier to private and public sector growth, therefore low interest rates are an important condition for encouraging private investment (Sutawijaya & Zulfahmi, 2013).

Interest Rate Theory

According to Keynes, the interest rate is not the principal element that affects the amount of investment. However, there are several other factors that influence, for example, the level of use and development of technology, forecasts of future developments, and current economic conditions. So, even though the interest rate is high, if the current economic conditions are good for investment and the prospects for the future are also very good, the investment activity will still be carried out (Yunus, Rostin, & Rumbia, 2019).

Exchange Theory

The approach assumes that currency of prices are determined in the financial capital market and trade flows do not tend towards equilibrium, besides that Keynes also assumes that the effect of income is more important in determining the current account than the price effect.

The classical view theory assumes that interest rates determine the amount of savings and investments made in the economy. Changes in the value of interest rates cause changes in household saving and the demand for firm investment funds, so an equilibrium in the classical view will occur when investment equals saving (Pardede, 2018).

Labor Theory

According to Keynes, there are three interrelated factors of production, namely natural resources, capital, and labor. According to him, labor is the personal service of the entrepreneur and his assistant which is the only factor of production operating in the given environment of engineering, natural resources, capital equipment and effective demand. This condition explains the importance of taking labor as the single necessary physical unit in the economic system, regardless of the unit of money and time (Mochtar, 2019).

The Relationship of Inflation to Investment

Inflation can affect investment where inflation causes a reduction in the amount of output produced by producers and investors respond to reducing their investment realization because of the assumption from investors that investors do not get the expected returns (Siregar, 2016).

Interest Rate Relationship to Investment

The interest rate is a crucial factor affecting investment. Fluctuating interest rates will be taken into account by investors. If the interest rate is lower than what is expected, then someone will choose to invest instead of lending money to other people or saving their money in a bank (Hastuti & Rusliana, 2013).

Exchange Rate Relationship to Investment

Exchange rates have an uncertain impact on changes in exchange rates. Referring to the explanation from Shikawa, that changes in foreign currency exchange rates on investment can have a direct effect through various channels, namely the supply side and domestic demand. A decrease in the exchange rate in the short term will reduce investment through a negative impact on domestic absorption or what is called expenditure reducing effect. For this reason, the decline in the exchange rate will trigger the emergence of the real value of assets because in general the price level increases and then domestic demand will decrease (Setiono, 2018).

Labor Relations to Investment

Labor is a population that has the potential to produce services and goods and is economically active. Therefore, labor is a crucial factor in production. The increasing number of workers will make production capacity increase. Later this increase in production capacity will make investment increase (Komarlina, Dwi Hastuti and Rusliana, 2013)

2. Research Method

Definition and Measurement of Operational Variables

Table 1. Variable Measurement

Variable	Indicator	Calculation formula	Measurement Scale
Investment (Y)	Investment consisting of domestic and foreign from all sectors	Total realization of investment project value Foreign Investment + Domestic Investment	Nominal
Inflation (X ₁)	Inflation is an increase in variable costs per unit and the price of goods continuously in a certain period expressed in percent	$INF = \frac{IHK_n - IHK_{n-1}}{IHK_{n-1}} \times 100$	Ratio
Interest Rate (X ₂)	The value of the interest rate determined by Bank Indonesia as the institution that holds the highest authority in controlling monetary policy in the State of Indonesia	The exchange rate of the Rupiah against the US dollar, the exchange rate used is the middle rate of the rupiah against the US dollar issued by Bank Indonesia	Ratio
Exchange Rate (X ₃)	An activity of purchasing goods or services from	Exchange rate = nominal exchange rate x (foreign CPI/domestic CPI)	Nominal

	other countries into the country		
Labor (X_4)	Residents of working age	Residents who have reached the age of 15 years or more	Nominal (people)

Population and Sample

In this study, the population is investment, inflation, interest rates, exchange rates and labor in Indonesia, with a sample of 1990-2019.

Data collection technique

There are several sources of data used in this study, including the Central Statistics Agency and the Investment Coordinating Board. To support data needs, data is collected by means of Documentation (data collected using documentation techniques is done by making copies into Microsoft Excel 2020 so that it can be processed easily in the EViews 10 software program) and Library Studies (collected data and information to be used as references or guidelines research, namely researching, reading, and reviewing various literatures or references related to the research being carried out).

Data analysis technique

In this study, the classical assumption test was carried out especially where, among others, the tests were as follows, normality test, multicollinearity test, autocorrelation test, heteroscedasticity test and linearity test, which then obtained a multiple linear regression model, which was chosen because it was a linear regression model involving more than one independent variable or predictor and also carried out to see the magnitude of the correlation between the independent variables (X_1 , X_2 , X_3 and X_4) on the dependent variable (Y). With the regression equation as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Description: Y = Investment, β_0 = Constant, β_1 , β_2 , β_3 , β_4 = Coefficient, X_1 = Inflation, X_2 = Interest Rate, X_3 = Exchange Rate, X_4 = Labor, ε = *error term*

3. Results and Discussion

3.1. Results

A good research model before performing multiple linear regression, must pass the classical assumption test. This is necessary so that the regression results obtained are unbiased and can be accounted for.

Classic assumption test

Normality test

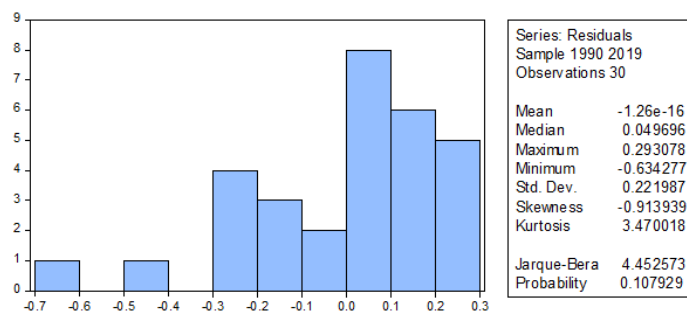


Figure 2. Normality Test Results

Source: Eviews10 Data Processing Results,

From the normality test using the Jarque Bera approach, the Jarque Bera prob value is 0.1079, greater than 0.05 so H_0 is rejected, meaning that the residual research data is normal.

Multicollinearity Test

Table 1. Multicollinearity Test Results

Variable	Centered VIF
C	NA
LNINF	1.171847
LNSB	2.475410
LNKURS	4.019697
LNTK	3.730466

Source: Eviews10 Data Processing Results,

Based on the results of the multicollinearity test in Table 2 above, it can be concluded that there is no multicollinearity problem because the independent variables of Inflation, Interest Rates, Exchange Rates and Labor have VIF values below 10.

Autocorrelation Test

Table 2. Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.063656	Prob. F(2,23)	0.3616
Obs*R-squared	2.539840	Prob. Chi-Square(2)	0.2809

Source: Eviews10 Data Processing Results,

Based on the results of the autocorrelation test in Table 3 above, it can be concluded that there is no autocorrelation problem because the probability of 0.2809 is greater than the significance level of 5%.

Heteroscedasticity Test

Table 3. Heteroscedasticity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.338300	Prob. F(4,25)	0.8495
Obs*R-squared	1.540458	Prob. Chi-Square(4)	0.8195
Scaled explained SS	1.321166	Prob. Chi-Square(4)	0.8578

Source: Eviews10 Data Processing Results,

Based on the test results, it can be concluded that there is no heteroscedasticity problem because the probability that it has is 0.8195 which is greater than the significance level of 5%.

Linearity Test

Table 4. Linearity Test Results

Ramsey RESET Test
Equation: UNTITLED
Specification: LNINVESTASI C LNINFLASI LNSUKUBUNGA LNKURS
LNTENAGAKERJA
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	3.045983	24	0.0056
F-statistic	9.278011	(1, 24)	0.0056
Likelihood ratio	9.805291	1	0.0017

Source: Eviews10 Data Processing Results,

Based on the test results, it can be concluded that the occurrence of linearity problems is due to the value of Prob. The F-statistic of 0.0056 is smaller than the 5% alpha level, then the regression model does not meet the assumption of linearity. But according to the book (Gujarati & Porter, 2012), the linearity test does not have to be carried out by the researcher, this is due to the purpose of the linear regression test, if the aim is to form a new model that is BLUE (Best Linear Unbiased Estimation) then this test is mandatory. So, the problem of linearity in this study can be ignored because this study is not aimed at creating a new model.

Hypothesis Testing Results

Table 5. Multiple Linear Regression Model Results

Dependent Variable: LNINVESTASI
Method: Least Squares
Date: 06/26/21 Time: 14:52
Sample: 1990 2019
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-22.11803	8.245273	-2.682510	0.0128
LNINFLASI	-0.008872	0.003600	-2.464407	0.0209
LNSUKUBUNGA	-0.061340	0.011955	-5.130995	0.0000
LNKURS	0.710469	0.113934	6.235820	0.0000
LNTENAGAKERJA	1.496276	0.469862	3.184503	0.0039
R-squared	0.962922	Mean dependent var		11.45207
Adjusted R-squared	0.956990	S.D. dependent var		1.152844
S.E. of regression	0.239087	Akaike info criterion		0.127032
Sum squared resid	1.429063	Schwarz criterion		0.360565
Log likelihood	3.094522	Hannan-Quinn criter.		0.201741
F-statistic	162.3150	Durbin-Watson stat		1.601775
Prob(F-statistic)	0.000000			

Source: Eviews10 Data Processing Results,

Based on the results of calculations using the Eviews 10 program in table 6 the results of multiple linear regression analysis on the research variables are as follows:

$$\text{LNINV} = -22.11803 - 0.008872 \text{ LNINF} - 0.061340 \text{ LNSB} + 0.710469 \text{ LNKURS} + 1.496276 \text{ LNTK}$$

Partial Test (t Test)

- If the significance value of the independent variable (p-value) > 0.05, this means that the independent variable has no effect on investment in Indonesia.
- If the significance value of the independent variable (p-value) > 0.05, this means that the independent variable has an effect on investment in Indonesia.

Based on the results above, it can also be seen that the p value of the inflation variable is 0.0209, the interest rate and exchange rate is 0.0000 and the labor is 0.0039, so it can be concluded that individually both inflation, interest rates, exchange rates and labor have an effect on to investment.

Simultaneous Testing (F Test)

Simultaneous testing (Test F) is carried out to see the effect of inflation, interest rates, exchange rates and labor on investment in Indonesia with the following guidelines:

- If the significance value of $f_{\text{statistic}} < f_{\text{table}}$, this means that all independent variables of inflation, interest rates, exchange rates and labor simultaneously have no effect on investment in Indonesia.
- If the significance value of $f_{\text{statistic}} > f_{\text{table}}$, it means that all independent variables of inflation, interest rates, exchange rates and labor simultaneously have an effect on investment in Indonesia.

Based on the simultaneous significance test through the F test, it shows that the value of $F_{\text{statistic}} = 162,315$ and the amount of F_{table} using Microsoft Excel with the formula $=\text{FINV}(\alpha; k-1; n-k) = \text{FINV}(0.05; 5-1; 30-5) = 2.75$. So it can be concluded that $F_{\text{statistic}} > F_{\text{table}}$, which means that simultaneously the inflation, interest rates, exchange rates and labor have an effect on investment in Indonesia.

Testing the Coefficient of Determination R-Squared and Adjusted R-Squared

Table 6. Results of R-Squared and Adjusted R-Squared

R-squared	0.962922
Adjusted R-Squared	0.956990
S.E of Regression	0.239087
S.D dependent var	1.152844

Source: Eviews10 Data Processing Results,

The test results of the coefficient of determination in the table above show that the R-Squared has a value of 96.29%. This indicates that the investment variable can be explained by 96.29% by the independent variables, namely Inflation, Interest Rates, Exchange Rates and Labor. The remaining percentage of 3.71% is influenced by other variables besides the variables used in this study.

The test results of the coefficient of determination in the table above show that the Adjusted R-Squared has a value of 0.956990. While the standard error value of the regression model is 0.239087 indicated by the label *SE of regression*. This standard error value is smaller than the standard deviation value of the response variable which is indicated by the label “SD dependent var” which is 1.152844 which means that the regression model is valid as a predictor model.

3.2. Discussion

Effect of Inflation on Investment

From the results of multiple linear regression above, it can be seen that the value of $t_{\text{statistic}} (-2.464407) > t_{\text{table}} (2.06)$ with a probability value of 0.0209. The results of the study prove that the inflation rate has a negative effect on investment in Indonesia in 1990-2019, where an increase in inflation results in a decrease in investment. These results are in accordance with research conducted by Tania Melinda and Hendry Cahyono (2016) a high inflation rate can cause goods and services to become less competitive which causes the profits obtained by the company to decrease. What is meant is that in a state of inflation, the price of goods usually increases and the company's income decreases, in other words, investors will stay away from their interest in investing when inflation increases. Inflation will erode the value of money from time to time, so investors before investing must look at a higher rate of return.

The Effect of Interest Rates on Investment

From the results of multiple linear regression above, it can be seen that the value of $t_{\text{statistic}} (-5.130995) > t_{\text{table}} (2.06)$ with a probability value of 0.0000. The results of the study prove that interest rates have a negative effect on investment in Indonesia in 1990-2019, where an increase in interest rates will reduce investment, this is because the cost of investment has decreased. An increase in interest rates results in a decrease in investment and vice versa, if interest rates fall so that investment will experience an increase, this is because the cost of investment has decreased. These results are in accordance with research conducted by Dewi and Triaryati (2015) where interest rate variables have a negative effect on investment. This result shows that the higher the interest rate prevailing in a country, the investors will not invest their capital. When there is an increase in interest rates, investors tend to choose to save money in the bank rather than make an investment. So that there is an increase in interest rates without being followed by an increase in the rate of return offered, investors will look for other, more promising sources.

Exchange Rate Effect on Investment

From the results of multiple linear regression above, it can be seen that the value of $t_{\text{statistic}} \text{ result } (6.235820) > t_{\text{table}} (2.06)$ with a probability value of 0.0000. The results of the study prove that the exchange rate has a positive effect on investment in Indonesia from 1990 to 2019, where an increase in the exchange rate results in an increase in investment. This means that the strengthening of the exchange rate of the US dollar or rupiah currency received will increasingly attract foreign investors to invest in Indonesia. The description of the results of this study is in line with the research of Indri Arrafi Juliannisa (2020) with the result that the exchange rate has a significant and positive effect on investment in Indonesia. This shows that there is a conformity with the research hypothesis which states that the exchange rate has an effect on investment. The

study assumes that a strengthening rupiah will result in fewer foreign investors investing their shares in Indonesia. So that the strengthening US dollar or the weakening of the rupiah exchange rate will have an impact on the smaller business costs borne by the company, such as the cost of raw materials, labor, and transportation so that the company's profits can increase if its products are exported abroad (Juliannisa, 2020). A declining exchange rate in the short run will reduce investment through a negative effect on domestic absorption, known as the expenditure reducing effect. In the long run, the exchange rate can be said to have a positive effect on investment and is in line with the theory that a strengthening rupiah rate will make a decrease in the disparatic reciprocity between domestic and foreign investors, so it tends to make investors choose to invest in Indonesia and vice versa (Setiono, 2018).

Exchange Rate Effect on Investment

From the results of the multiple linear regression above, it can be seen that the value of $t_{\text{statistic}}$ result (3.184503) > t_{table} (2.06) with a probability value of 0.0039. The results of this study prove that the labor has an influence on investment in Indonesia in 1990-2019, thus it can be interpreted that a large number of workers will increase the amount of investment in Indonesia. The large number of workers will increase production capacity to meet increasing needs. This means that if the number of workers increases, the realization of investment in Indonesia will also increase. This result is in accordance with the research of Dwi Hastuti and Nanang Rusliana (2013) with the result that Labor has a significant and positive effect on investment in Indonesia. Therefore, the hypothesis which states that Labor has an effect on Investment is accepted.

4. Conclusion

From the result of the study, the following conclusions have been drawn:

- a. There is an influence between inflation on investment in Indonesia. High inflation certainly has an impact on increasing the *money supply*, which is then accompanied by high interest rates. In addition, high inflation also has an impact on the decline in people's purchasing power, which will result in reduced profits or investment financing, so that investors' interest in investing also decreases.
- b. There is an influence between interest rates on investment in Indonesia because an increase in interest rates will reduce investment, this is due to a decrease in investment costs. An increase in interest rates causes a decrease in investment and vice versa, when interest rates decrease, an increase in investment is due to a decrease in investment costs. This explanation is in accordance with the theory that the interest rate is a crucial factor in attracting investment because usually the majority of investment is financed by banks. If the loan interest rate decreases, this will spur investors to borrow capital so that they will eventually invest.
- c. There is an influence between the exchange rate on investment in Indonesia, this is due to the strengthening of the value of the strengthening of the domestic currency against foreign currencies can increase investment interest in the country. Therefore, investors will invest in the country with the expectation that investors will make a profit in the future. And vice versa, where the declining RP/US\$ exchange rate will reduce the *expenditure reducing effect*. The declining exchange rate will cause the value of domestic raw materials to decrease, so entrepreneurs will tend to lower their investment

- d. There is an influence between labor on investment in Indonesia because if there is an increase in the number of workers, it can support an increase in production capacity. Through this increase in the future will also make an increase in investment. The more workers, the higher the opportunity for investment, and vice versa. As the number of workers decreases, production activities also decrease. This will cause enthusiasm in investment to be low.

Suggestion

- a. Theoretical Aspect

For further research, it is hoped that researchers can add several other countries for maximum results and can make comparisons between several countries and by using other macroeconomic indicators that are more influential on investment so that the output produced is more concrete and good.

- b. Practical Aspect

- 1) The government should provide the development of an integrated system such as skills training that is appropriate for what is needed by the labor market. Because the presence of a workforce will increase the fighting power to increase production capacity which can then make investors more interested in investing in the country.
- 2) It would be better for the government to anticipate a low exchange rate with a revaluation policy, namely the policy of making the domestic exchange rate against foreign exchange rates increase. Because the appreciation of the exchange rate can encourage the enthusiasm of domestic investment.

The government is expected through Bank Indonesia as the central bank in monetary policy in order to make the rupiah value stable, namely by maintaining a stable inflation rate and setting competitive interest rates so that foreign and domestic investors are interested in investing in Indonesia, but still maintain the existing economic growth.

Research Limitations

- a. The author uses one country, namely Indonesia and is expected to be able to use several other countries so that different results are possible
- b. The author limits the research by using four variables, namely interest rates, inflation, exchange rates and labor to find out several things that can affect investment in Indonesia, while there are other variables that can be used to determine how influential other variables are on investment in Indonesia, for example. such as national income, minimum wage, political stability of a country and other factors.
- c. In this study there is still a linearity problem, however based on the Gujarati book the researcher does not have to do a linearity test because it refers to the purpose of linear regression testing, this test is only mandatory if it aims to form a new model that nature is BLUE (Best Linear Unblased Estimation). Thus, the linearity problem of this study can be ignored because the aim is not to create a new model.

Due to the limitations of theory and time so that the implementation of the research can be in-depth, not all variables were studied, although the variables in this study were sufficient to describe the relationship between theory and the results of previous research.

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