Determinants Of The Hajj Organising Cost (BPIH) In Indonesia

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Abstract

This study is motivated by the phenomenon of fluctuations in the pilgrimage of Hajj organising cost (BPIH) in Indonesia, which tends to increase every year. In the macroeconomic context, there are many variables that can influence BPIH, such as inflation, interest rates, national economic growth, the exchange rate of the rupiah against foreign currencies, world oil prices, world gold prices, government subsidies, etc. In this study, the researcher examines the influence of inflation, exchange rates, global oil prices, and government policy subsidies on the Hajj pilgrimage costs (BPIH) in the short and long term. This is a quantitative study using time series data over a 30-year period, with annual data samples from 1995 to 2024. The basic analysis used in this study is VAR/VECM using the E-Views 13 testing tool. The data sources were obtained from monthly reports on the official website of Bank Indonesia (BI), the World Bank, the Ministry of Religious Affairs website, oilprice.com, etc. The results of this study indicate that the inflation variable has a short-term effect on BPIH, while in the long term it has no effect. Meanwhile, the exchange rate variable has an impact on BPIH in both the short and long term. Additionally, the global oil price variable has an impact on BPIH in the long term, while it does not have an impact in the short term. As for the government subsidy policy variable, it has an impact on BPIH in the short term, while it does not have an impact in the long term.

Keywords: *exchange rate, inflation, government subsidy policy, hajj pilgrimage costs, world oil price.*
JEL Codes : E52, Z12

INTRODUCTION

The Hajj pilgrimage is one of the pillars of Islam and is an obligation for every Muslim who is able and meets certain requirements. In Surah Ali Imran verse 97, Allah SWT says:

وَلِلَّهِ عَلَى ٱلنَّاسِ حِجُّ ٱلْبَيْتِ مَنِ ٱسْتَطَاعَ إِلَيْهِ سَبِيلًا ۚ وَمَن كَفَرَ فَإِنَّ ٱللَّهَ غَنِىٌّ عَنِ ٱلْعَٰلَمِينَ.....

And [due] to Allah from the people is a pilgrimage to the House, for whoever can find a way there. And whoever disbelieves - then indeed, Allah is Free of need from the worlds..... Meaning: ".....And (among) the obligations of mankind towards Allah is to perform the pilgrimage to the House of Allah, that is, for those who can make the journey there. Whoever denies (the obligation) of the pilgrimage, then know that Allah is Self-Sufficient (does not need anything) from the entire universe. (Q.S. Ali Imran/3:97)'.

As the country with the largest Muslim population in the world, Indonesia sends the largest number of pilgrims every year (Jumali, 2018) (Aziz, et.al, 2023). The obligation to perform the Hajj has successfully motivated hundreds of thousands of Muslims in Indonesia to perform the pilgrimage to the House of Allah in Mecca and Medina, Saudi Arabia (Mahfudloh, et.al, 2024). The queue for Hajj departure is determined by the registration made by prospective pilgrims through the deposit of Hajj funds. These Hajj funds consist of an initial deposit, benefit value, and perpetual funds for the community. Every Muslim who wishes to perform the Hajj pilgrimage is required to make an initial deposit first. The initial deposit is channelled to Islamic banks that provide Hajj fund products. As the number of prospective pilgrims increases each year, the amount of hajj funds collected also grows. To ensure that these funds are not simply stored away without being put to good use, the government strives to manage hajj finances so that they can be used for productive activities. Therefore, the Hajj Financial Management Agency (BPKH) was established as the institution responsible for managing hajj funds (Primadhany, 2018).

However, various obstacles and challenges have arisen due to the high demand for performing the Hajj pilgrimage, including a long waiting period for departure (Aziz, et al., 2023) in (Mahfudloh, et al., 2024), as well as problems in managing Hajj funds, which have an impact on fluctuations in the cost of the Hajj pilgrimage (BIPIH) (Jiwa et al., 2023) in (Mahfudloh, et al., 2024).

Although the cost of performing the Hajj pilgrimage in Indonesia has been determined through the applicable mechanism, the amount of the Hajj cost is still influenced by several external factors such as inflation, the exchange rate of the rupiah against the US dollar (IDR-USD), and world oil prices. The IDR-USD exchange rate plays an important role because most of the Hajj travel costs are paid in US dollars. Inflation causes an increase in the prices of goods and services, including components of the Hajj costs such as accommodation, consumption, and air transportation. In addition, increases in world oil prices have an impact on global economic conditions, which often trigger exchange rate fluctuations and inflation, thereby affecting the cost of Hajj travel. Therefore, this study will examine in more depth the factors that are thought to influence the cost of Hajj travel in Indonesia (Nurunnasikin et al., 2024). The factors that influence the determination of the Hajj Pilgrimage Cost (BPIH) in Indonesia in this study are the effects of inflation, the exchange rate of the Rupiah against the US Dollar, global oil prices, and the amount of government subsidies for Hajj costs.

Various previous studies have been conducted to examine the relationship between macroeconomic variables and the Cost of Performing the Hajj (BPIH), with the aim of identifying factors that significantly influence fluctuations in the cost of performing the Hajj (BPIH). The method commonly used in this study is Vector Autoregressive (VAR), which provides a deeper and more comprehensive understanding of the relationship between variables in time series analysis. A previous study conducted by (Mahfudloh et al., 2024) on the impact of inflation and the rupiah exchange rate on BPIH in Surabaya during the period 2012-2022 showed that the variables of inflation and the rupiah exchange rate had a significant effect.

Meanwhile, Nurunnasikin et al. (2024) conducted a similar study on the influence of macroeconomic variables on BPIH. The study concluded that currency exchange rates, world oil prices, and inflation have a long-term impact on BPIH. Meanwhile, Isabella and Komar (2020) stated that in the long term, BPIH costs are influenced by several factors, including world oil prices and the rupiah exchange rate. These two factors are considered important aspects that influence the government's decision in determining the cost of the Hajj. Research conducted by (Budiman and Kusuma, 2016) proves that oil prices are related to the determination of BPIH, while the rupiah exchange rate, based on annual average data, does not show a significant relationship with the determination of BPIH. Based on the variance decomposition function analysis, the contribution of oil prices to the BPIH is 9.8%, while the exchange rate contributes 6.93%. These results indicate that neither factor has a dominant influence in determining the amount of the BPIH in Indonesia.

LITERATURE REVIEW

This research uses macroeconomic theory as a framework in which macroeconomic theory studies or explains overall or aggregate economic behaviour in an economy. The main focus of this theory includes issues such as national income, economic growth, inflation, unemployment, and economic policies that affect macroeconomic conditions broadly.

Inflation

According to Boediono, inflation is the process of continuous increase in the prices of goods and services over a certain period of time. Meanwhile, the Central Statistics Agency (BPS) defines inflation as an economic condition in a country characterised by a long-term upward trend in the prices of goods and services due to an imbalance between the amount of money and goods in circulation. Inflation affects people's incomes, with some groups benefiting and others losing out. Those who lose out are those with fixed incomes, as their real incomes decline in line with the rate of inflation (Nurunnasikin et al., 2024).

Exchange Rate

In a fixed exchange rate system, the value of the domestic currency is pegged at a constant rate against foreign currencies. Meanwhile, in a floating exchange rate system, the exchange rate can fluctuate at any time, depending on the balance between the supply and demand for foreign currencies compared to the

domestic currency. Any change in the supply or demand for a currency will affect its exchange rate. If the demand for foreign currency increases relative to the domestic currency, the value of the domestic currency will fall. Conversely, if demand for foreign currency decreases, the value of the domestic currency will increase.

In addition, if the supply of foreign currency increases relative to the domestic currency, the exchange rate of the domestic currency will increase. However, if the supply of foreign currency decreases, the exchange rate of the domestic currency will decrease (Simorangkir, 2004). In this exchange rate system, the central bank determines the exchange rate of the domestic currency against foreign currencies for a short period of time. The exchange rate (peg) can be set through direct intervention or market mechanisms. Exchange rates in this system are often adjusted quickly in response to changes in market forces or fundamental economic conditions. This system does not require a commitment to maintain the exchange rate at a certain level or to maintain a certain real exchange rate. Thus, this system is able to reduce exchange rate instability or volatility in the short term. Although this system cannot be used as a nominal benchmark, its flexibility allows for more independent monetary policy implementation (Simorangkir, 2004)

World Oil Prices

World oil prices are one of the macroeconomic factors that are expected to affect the cost of performing the Hajj pilgrimage in Indonesia. An increase in oil prices will have an impact on transportation costs, such as fuel for aeroplanes, buses, and other vehicles used during the Hajj pilgrimage. As a result, when oil prices rise, these costs tend to increase as well, causing the overall cost of the Hajj to rise. In addition, world oil prices are thought to affect currency exchange rates, as oil-producing countries such as Saudi Arabia rely on oil revenues to balance their budgets. When oil prices fall, the income of these countries also declines, which in the long term can cause their currencies to depreciate. Thus, fluctuations in world oil prices not only affect Hajj transportation costs, but also have the potential to impact currency exchange rates, which ultimately affect the overall cost of the Hajj pilgrimage (Nurunnasikin et al., 2024).

Government Subsidies Or Benefits

The Ministry of Religious Affairs (Kemenag) took steps by issuing the Hajj Financial Management Law (UU-PKH) No. 34 of 2014 as an effort to improve the management of hajj funds. This law was created because the previous regulations were considered insufficient in regulating the management of hajj funds. With this law, it is hoped that the management of hajj funds can be carried out more professionally and provide optimal benefits for the implementation of the hajj pilgrimage. The law serves as a strong legal basis to ensure that the management of hajj funds is effective, efficient, transparent, and accountable (Abimanyu, 2014) in (Alfiyanti et al., 2023).

Cost of Organising The Hajj (BPIH)

The Hajj Fund itself comes from BPIH deposits, efficiency in organising the Hajj, returns on investments, and other revenue managed by the state to support the implementation of the Hajj. The management of Hajj Funds includes planning, receipt, expenditure, development, accounting, reporting, and accountability for these funds. Meanwhile, the management of BPIH deposits includes planning, receipt, expenditure, accounting, reporting, and accountability related to BPIH deposits. In addition, Hajj Fund Management and Development (PPDH) is the process of planning and implementing fund development from BPIH deposits, managing the benefits of these deposits, and implementing accounting, reporting, and accountability for these activities (Hidayati, et al., 2024).

Based on macroeconomic theory and previous studies that inflation, exchange rates, world oil prices, and subsidies or benefits can influence the determination of Hajj Pilgrimage Costs (BPIH), the following hypothesis was formulated:

H1: Inflation has a positive effect on BPIH. The higher the inflation rate, the higher the BPIH that pilgrims must pay (Mahfudloh, et.al, 2024).

H2: Exchange rates have a positive effect on BPIH. A weakening of the rupiah against the US dollar (depreciation) will increase the BPIH paid by pilgrims (Nurunnasikin,et.al, 2024).

H3: World oil prices have a positive effect on BPIH. In the long term, world oil prices significantly increase the cost of Hajj due to their correlation with jet fuel and travel logistics costs. An increase in world oil prices will result in an increase in BPIH (Budiman, & Kusuma, 2016).

H4: Government subsidies or benefits have a positive effect on the cost of performing the Hajj (BPIH). The greater the government subsidy, the lower the BPIH that pilgrims must pay (Isabela & Komar, 2020).

RESEARCH METHOD

The objects of this study include variables that affect BPIH, namely inflation, exchange rates, world oil prices, and government subsidies or benefit values. The sample used is annual secondary data on inflation, exchange rates, world oil prices, and subsidies or benefit values over the last 30 years, namely. As in this study, the secondary data used were obtained through: Indonesia inflation Data: inflation Data in Indonesia attached to Bank Indonesia (BI) which can be accessed through the website: https://www.bi.go.id/id/statistik/indikator/data-inflasi.aspx. Exchange rate Data (Kurs) Rupiah to United States Dollar: IDR to USD exchange rate Data attached to the Central Statistics Agency (BPS) which can be accessed through the site: Agency (BPS) which can https://www.bps.go.id/id/statistics-table/2/Mjg0IzI=/kurs-tengah-beberapa-mata-uang-asing-terhadap-rupiah-di-bank-indonesia-dan-harga-emas-di-jakarta.html. Data Harga MinyakDunia:https://id.investing.com/commodities/crude-oil-historical-data. Government subsidy Data: Hajj travel cost Data (BPIH): BPIH Data in Indonesia attached https://haji.kemenag.go.id/v5/detail/keppres-biaya-haji-1445-h-terbit-catat-besaran-dan-tahapan-pelunasannya.

The data analysis techniques used in this study are Vector Autoregression (VAR) or Vector Error Correction Model (VECM). Using E-Views 13, this study went through several stages, including Stationarity Test, Optimum Lag Test, VAR Stability Test, Johansen Cointegration Test, Granger Causality Test, VAR/VECM Estimation Test, Impulse Response Function (IRF) Test, and Forecast Error Variance Decomposition (FEVD) Test.

RESULTS AND DISCUSSION

Descriptive Data Analysis

Descriptive statistical analysis provides a statistical overview of each independent and dependent variable used in the study, including the minimum value, maximum value, mean or average value, standard deviation, and number of observations or amount of data in the study. The results of the descriptive analysis are presented below:

Table 1. Descriptive Statistical Test Result

Variable	Observations	Minimum	Maximum	Mean	Std.Deviation
Inflation	30	0,015600	0,776300	0,085777	0,135577
Exchange Rate	30	7,717800	9,690400	9,164257	0,509968
Oil Price	30	2,383400	4,564300	3,789673	0,654152
Government Subsidy	30	15,16100	17,87440	16,52339	0,763186
BPIH	30	16,75990	18,40950	17,56613	0,543301

Source: data processed by researchers, 2025

From the test results, it is known that the amount of data in the study is 30. The Inflation variable has minimum, maximum, mean, and standard deviation values of 0.015600, 0.776300, 0.085777, and 0.135577, respectively. The Exchange Rate variable has minimum, maximum, mean, and standard deviation values of 7.717800, 9.690400, 9.164257, and 0.509968, respectively. Meanwhile, the Oil Price variable has minimum, maximum, mean, and standard deviation values of 2.383400, 4.564300, 3.789673, and 0.654152, respectively. Meanwhile, the Government Subsidy variable has minimum, maximum, mean, and standard deviation values of 15.16100, 17.87440, 16.52339, and 0.763186, respectively. And the BPIH variable has minimum, maximum, mean, and standard deviation values of 16.75990, 18.40950, 17.56613, and 0.543301, respectively.

Stationarity Test

A stationarity test is conducted to ensure that time series data meets the requirements for analysis, one of which is by performing a unit root test. Non-stationary data can cause spurious regression, which is a condition where the relationship between two or more variables appears statistically significant, when in fact there is no real relationship (Riani, 2016). The stationarity test on this data uses the Augmented

Dickey Fuller (ADF) method. If the ADF value is greater than the critical value at a significance level of 5%, then the data contains a unit root and is declared non-stationary. Conversely, if the ADF value is less than the critical value of 5%, then the data does not contain a unit root and is declared stationary. The following presents the results of the stationarity test in this study:

Table 2. Stationarity Test Results at the Level

Variable	ADF t-statistic	ADF McKimon Critical Value 5%	Prob	Description
Inflation	-1,482865	-2,998064	0,5241	Non-stationary
Exchange Rate	**-3,161485**	**-2,967767**	**0,0330**	**Stationary**
Oil Price	-1,762455	-2,967767	0,3907	Non-stationary
Government Subsidies	-1,988515	-2,967767	0,2899	Non-stationary
BPIH	-0,410043	-2,971853	0,8943	Non-stationary

Source: data processed by researchers, 2025

The test results show that the stationarity test at the level only found one variable that is stationary at this level, namely the Exchange Rate. Meanwhile, other variables, namely Inflation, oil prices, government subsidies, and BPIH, showed non-stationary test results at the level.

Table 3. Stationarity Test Results at the First Difference Level

Variable	ADF t-statistic	ADF McKimon Critical Value 5%	Prob	Description
Inflation	**-7,309172**	**-2,998064**	**0,0000**	**Stationary**
Oil Price	**-5,213246**	**-2,971853**	**0,0002**	**Stationary**
Government Subsidies	**-8,063922**	**-2,971853**	**0,0000**	**Stationary**
BPIH	**-11,63610**	**-2,971853**	**0,0000**	**Stationary**

Source: data processed by researchers, 2025

Based on the test results, the stationarity test shows that at the first difference level, all variables, namely inflation, oil prices, government subsidies, and BPIH, are stationary. Therefore, if all data are stationary, the testing process can proceed to the next stage.

Optimum Lag Test (Lag Length)

The optimum lag test is used to address the issue of autocorrelation, and aims to determine how long the influence of a variable on its past values lasts. The lag length in the data greatly affects the estimation of the VECM model. In determining the optimum lag, several information criteria are used, namely Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn (HQ). The selected lag is the one that meets the criteria of these methods. The following are the results of the optimum lag test in this study:

Figure 1. Results of the Optimum Lag Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-23.09023	NA	5.12e-06	2.006445	2.244339	2.079172
1	60.65773	131.6039	7.97e-08	-2.189838	-0.762476*	-1.753479
2	98.62586	46.10416*	3.81e-08*	-3.116133*	-0.499303	-2.316142*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: data processed by researchers, 2025

From the test results, it was concluded that the optimal lag length was two (2). This was based on the indicates lag order selected by the criterion (*) that was most frequently used. Therefore, the most appropriate optimal lag length in this study was two (2).

VAR Model Stability Test

The VAR model stability test aims to ensure that the estimation results in the Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) analyses are reliable and valid. The stability test process is carried out by examining the stability conditions of VAR through the roots of the characteristic polynomial calculated for all variables and the number of lags in the VAR model. A VAR system is considered stable if all modulus values of the roots are less than one.

Figure 2. VAR Stability Test Results

Root	Modulus
0.932583	0.932583
0.766922	0.766922
0.652153 - 0.331924i	0.731763
0.652153 + 0.331924i	0.731763
0.404130 - 0.585725i	0.711614
0.404130 + 0.585725i	0.711614
0.630843 - 0.143804i	0.647026
0.630843 + 0.143804i	0.647026
0.012635 - 0.376697i	0.376908
0.012635 + 0.376697i	0.376908

Source: data processed by researchers, 2025

The test results show that the VAR model used in this study is stable, as can be seen from the modulus value range of 0.932583 to 0.376908, which means that the modulus value is less than one (<1).

Johansen Cointegration Test

The cointegration test aims to determine whether there is a long-term relationship between stationary variables. In this study, the cointegration test was conducted using the Johansen Cointegration Test. The test results were determined by comparing the Trace statistic value with the critical value at a significance level of 5%. If the Trace statistic value is greater than the critical value of 5%, it can be concluded that there is cointegration and a long-term relationship between the variables. Conversely, if the Trace statistic value is less than the critical value of 5%, there is no cointegration and no long-term relationship between the variables. The following are the cointegration test results obtained from the following data processing.

Figure 3. Results of Johansen's Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value
None *	0.989991	265.2135	79.34145	0.0000
At most 1 *	0.913094	140.8990	55.24578	0.0000
At most 2 *	0.829407	74.93985	35.01090	0.0000
At most 3 *	0.499701	27.19106	18.39771	0.0023
At most 4 *	0.269865	8.492202	3.841465	0.0036

Trace test indicates 5 cointegrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: data processed by researchers, 2025

From the observation results, it can be seen that the trace statistic value in the None row is 265.2135, the At most 1 row is 140.8990, the At most 2 row is 74.93985, the row At most 3 is 27.19106, and the row At most 4 is 8.492202, which are greater than the critical value of 5% or 0.05. In addition, the probability values in row None of 0.0000, row At most 1 of 0.0000, row At most 2 of 0.0000, row At most 3 of 0.0023, and row At most 4 of 0.0036 are smaller than the critical value of 5% or 0.05. The trace statistic values for the None row, At most 1 row, At most 2 row, At most 3 row, and At most 4 row are greater than the critical value of 5% or 0.05, and the probability values for the None row, At Most 1 row, At most 2 row, At most 3 row, and At most 4 row are smaller than the critical value of 5% or 0.05 indicate that there are five cointegration equations that mean there is a long-term equilibrium between the variables, so the next test will continue with the Vector Error Correction Model (VECM) method.

Granger Causality Test

The Granger Causality Test aims to determine whether there is a causal relationship between independent variables and dependent variables, given that each variable in the study can act as an endogenous or exogenous variable. In this study, the Granger causality test was used to test for a causal relationship between the Hajj Pilgrimage Cost (BPIH) variable and the Inflation, Exchange Rate, World Oil Price, and Government Subsidy variables. The test was conducted by comparing the probability values of each variable with a significance level of 5%. If the probability value is less than 5%, then there is a causal relationship; conversely, if the probability value is greater than 5%, then there is no causal relationship. The following are the results of the Granger causality test in this study:

Figure 4. Results of the Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
X2_KURS does not Granger Cause X1_INFLASI	28	12.1881	0.0002
X1_INFLASI does not Granger Cause X2_KURS		4.24778	0.0269
X3_OILPRICE does not Granger Cause X1_INFLASI	28	2.75840	0.0844
X1_INFLASI does not Granger Cause X3_OILPRICE		0.54858	0.5851
X4_SUBSIDIES does not Granger Cause X1_INFLASI	28	3.87091	0.0356
X1_INFLASI does not Granger Cause X4_SUBSIDIES		0.14265	0.8678
Y_BPIH does not Granger Cause X1_INFLASI	28	3.72967	0.0395
X1_INFLASI does not Granger Cause Y_BPIH		0.53882	0.5906
X3_OILPRICE does not Granger Cause X2_KURS	28	0.11763	0.8896
X2_KURS does not Granger Cause X3_OILPRICE		1.97369	0.1618
X4_SUBSIDIES does not Granger Cause X2_KURS	28	0.35026	0.7082
X2_KURS does not Granger Cause X4_SUBSIDIES		1.61426	0.2208
Y_BPIH does not Granger Cause X2_KURS	28	0.99603	0.3847
X2_KURS does not Granger Cause Y_BPIH		1.76439	0.1937
X4_SUBSIDIES does not Granger Cause X3_OILPRICE	28	0.40964	0.6686
X3_OILPRICE does not Granger Cause X4_SUBSIDIES		1.47442	0.2498
Y_BPIH does not Granger Cause X3_OILPRICE	28	0.64860	0.5321
X3_OILPRICE does not Granger Cause Y_BPIH		3.17471	0.0606
Y_BPIH does not Granger Cause X4_SUBSIDIES	28	5.53080	0.0109
X4_SUBSIDIES does not Granger Cause Y_BPIH		5.58748	0.0105

Source: data processed by researchers, 2025

From the test results between the Inflation variable and BPIH, there is a one-way causal relationship, which can be observed through the F-Statistic probability value of 0.0395 < critical value of 0.05 or 5%. Meanwhile, there is no causal relationship between the Exchange Rate variable and BPIH, as observed through the F-Statistic probability value of 0.3847 > critical value of 0.05 or 5%. Meanwhile, there is no causal relationship between the Oil Price variable and BPIH, as observed through the F-Statistic probability value of 0.5321 > critical value of 0.05 or 5%. And between the Government Subsidy variable and the benefit value, there is a two-way causal relationship, as observed through the F-Statistic probability value of 0.0109 < the critical value of 0.05 or 5%.

VECM Estimation Test

After going through a series of pre-estimation stages such as data stationarity testing, determining the optimal lag length, VAR stability testing, cointegration testing, and Granger causality testing, it was found that there were four rank variables that had a cointegration relationship. Therefore, the analysis in this study used the VECM model. The VECM model was chosen to examine and analyse the short-term and long-term relationships between independent and dependent variables. The significance level between variables in this study was tested at a 5% significance level by comparing the t-statistic value with the t-table. If the t-statistic is greater than the t-table, there is a significant effect between the independent variables and the dependent variables. The t-table value in this study was obtained by calculating the degree of freedom (df), which involves several important parameters, namely the number of research variables (k) and the number of observations (n), according to the formula df = n - k. Thus, in this study, a degree of freedom value of 30 - 5 = 25 was obtained. For df = 25, the t-table value used is 2.059539. Next, the results of the VECM model estimation are presented below:

Table 4. Short-Term VECM Test Results

Variable	Coefficient	t- Table	t- Statistic	Result
COINTEQ1	**-2,726147**	**2,059539**	**[-20, 6403]**	**Significant**
D (X1 INFLASI (-1))	**0,752368**	**2,059539**	**6,16901**	**Significant**
D (X1 INFLASI (-2))	**0,126091**	**2,059539**	**2,23743**	**Significant**
D (X2 KURS (-1))	**1,179014**	**2,059539**	**4,71849**	**Significant**
D (X2 KURS (-2))	0,408117	2,059539	1,41234	Not Significant
D (X3OILPRICE((-1))	-0,046343	2,059539	[-0,19984]	Not Significant
D (X3 OILPRICE (-2))	-0,337325	2,059539	[-1,42843]	Not Significant
D (X4 SUBSIDIES (-1))	-0,281732	2,059539	[-1,27586]	Not Significant
D (X4 SUBSIDIES (-2))	0,144730	2,059539	0,66725	Not Significant

Source: data processed by researchers, 2025

The results of the short-term Vector Error Correction Model (VECM) estimation show that the variables of World Oil Prices and Government Subsidies do not have a significant effect on the Cost of Performing the Hajj (BPIH). This means that a 1% increase in these variables in the short term does not have a significant impact on BPIH. Conversely, the Inflation variable at lags 1 and 2, as well as the Exchange Rate variable at lag 1, show a significant positive effect on the BPIH variable at a 5% significance level. This can be seen from the t-statistic value of the Inflation variable at lag 1 of 6.16901 and at lag 2 of 2.23743, which is greater than the t-table value of 2.059539. Furthermore, it can also be seen from the t-statistic value of the Exchange Rate variable at lag 1 of 4.71849, which is greater than the t-table value of 2.059539. Thus, if inflation rises by 1%, the Hajj Pilgrimage Cost (BPIH) variable will increase by 0.752368 per cent at lag 1 and 0.126091 per cent at lag 2. Meanwhile, if the Exchange Rate variable increases by 1 Rupiah, the Hajj Pilgrimage Cost (BPIH) variable will decrease by 1.179014 Rupiah at lag 1. Furthermore, the results of the VECM modelling for the long term are presented in the following table:

Table 5. Long-Term VECM Test Results

Variable	Coefficient	t- Table	t- Statistic	Result
INFLATION	1,000000	2,059539	1,000000	Not Significant
EXCHANGE RATE	**0,180826**	**2,059539**	**15,5058**	**Significant**
OIL PRICE	**0,020427**	**2,059539**	**3,91262**	**Significant**
GOVERNMENT SUBSIDIES	**[-0,024007]**	**2,059539**	**[-4, 25456]**	**Significant**

Source: data processed by researchers, 2025

The results of the Vector Error Correction Model (VECM) estimation in the long term show that the inflation variable does not have a significant effect on the Hajj Pilgrimage Cost (BPIH). Other variables that have an effect on BPIH are the exchange rate, world oil prices, and government subsidies, as

evidenced by the estimated t-values statistic of 15.5058 > t table 2.059539 for the Exchange Rate variable, 3.91262 > t table 2.059539 for the World Oil Price variable, and [-4.25456] > t table 2.059539 for the Government Subsidy variable. This means that when the Exchange Rate increases by 1 Rupiah, BPIH will decrease by 0.180826 Rupiah, and if there is a 1% increase in World Oil Prices, BPIH will increase by 0.020427%. Then, if there is a 1% increase in Government Subsidies, the BPIH will decrease by 0.024007%.

Impulse Response Function (IRF) Test

The Impulse Response Function (IRF) test is used to examine how each variable in the study responds, both currently and in the future, when there is a change or shock to other variables. This analysis utilises all historical data from the variables in the model to determine the extent of the impact of shocks received by a variable within a certain time frame. In this study, the IRF test is used to describe how the Hajj Pilgrimage Cost (BPIH) responds to changes in the variables of Inflation, Exchange Rate, World Oil Prices, and Government Subsidies over the next ten periods. The results of the IRF analysis in this study are presented as follows:

Table 6. IRF Test Results

Period	BPIH	Inflation	Exchange Rate	Oil Price	Government Subsidy
1	0,000000	-0,054687	0,099440	-0,031918	0,115895
2	-0,023263	- 0,054297	0,049993	0,096260	0,120307
3	-0,023090	-0,005613	0,092923	0,042469	0,120864
4	-0,016959	-0,039313	0,058433	0,030847	0,104708
5	-0,013857	-0,026357	0,078161	0,029196	0,092304
6	-0,017722	-0,037321	0,066210	0,052780	0,085382
7	-0,017669	-0,027641	0,072423	0,054067	0,081939
8	-0,017433	-0,032001	0,069506	0,047359	0,082507
9	-0,016731	-0,030434	0,070780	0,046858	0,083139
10	-0,017127	-0,031834	0,070337	0,052281	0,084606

Source: data processed by researchers, 2025

In Table 6 above, the 'period' column shows the observation time or forecast period of the data used, while the columns 'BPIH, Inflation, Exchange Rate, Oil Price, and Government Subsidies' show the impulse response values in a given period to a shock to the variable. The following is a graph showing the impulse response:

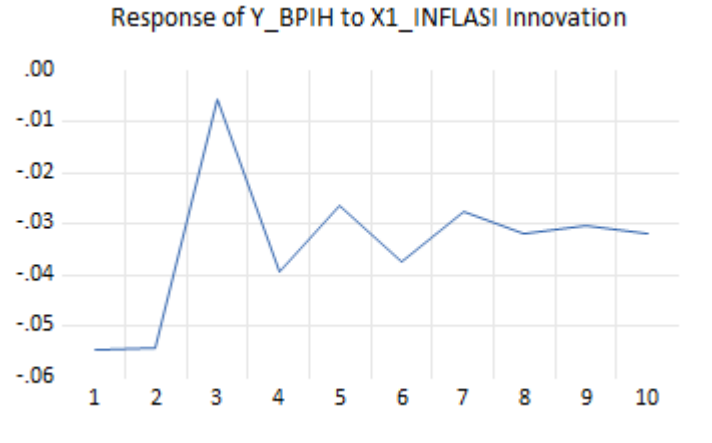

Figure 5. Multi-Graph Results of IRF Test for Inflation Variables
Source: data processed by researchers, 2025

Based on Figure 5 above, it can be seen that the response of the BPIH variable (Y) occurs due to a shock from the Inflation variable (X1). In the early period, BPIH responded negatively to shocks originating from inflation. From period 2 to period 10, BPIH continues to show a negative response to shocks from the inflation variable, and this response pattern tends to fluctuate. This negative response means that if

there is a decline in inflation, BPIH will also decline, and the relationship between the two is unidirectional. The sharpest decline in BPIH in response to inflation shocks was recorded in period 4, and the most significant increase was in period 3.

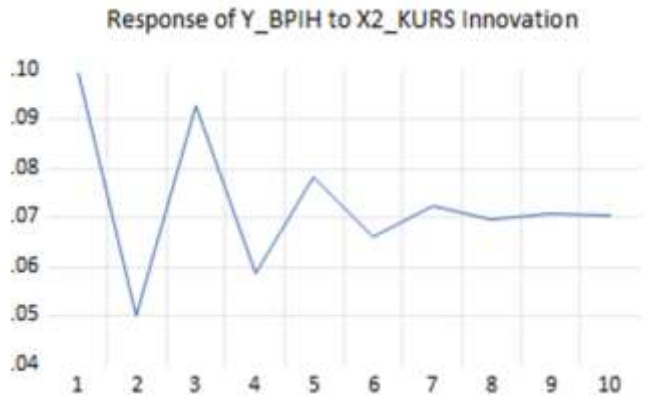

Figure 6. Multi-Graph Results of IRF Test for Exchange Rate Variables
Source: data processed by researchers, 2025

Based on Figure 6 above, it can be seen that the response of the BPIH variable (Y) occurs due to a shock to the Exchange Rate variable (X2). In the early period, BPIH responded positively to shocks originating from the Exchange Rate. Furthermore, from period 2 to period 10, BPIH still showed a positive response to the shock, with a fluctuating pattern. This positive response means that when there is a decline in the exchange rate (the Rupiah weakens against the Dollar), BPIH tends to increase and the relationship between the two is inversely proportional during that time period. The sharpest decline in BPIH's response to exchange rate shocks was recorded in period 2 and the most significant increase in period 3.

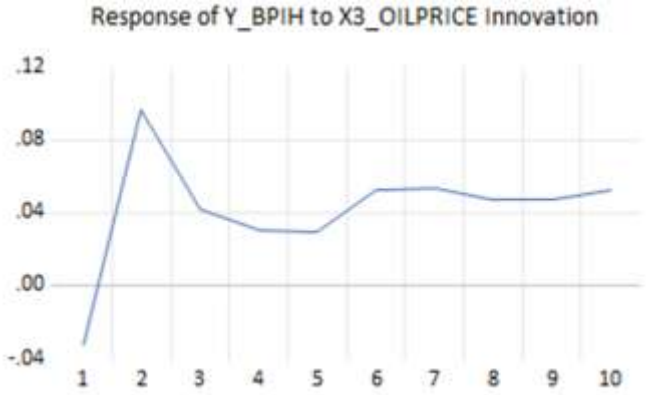

Figure 7. Multi-Graph Results of IRF Test for Oil Price Variable
Source: data processed by researchers, 2025

Based on Figure 7 above, it is known that the response given by the BPIH (Y) variable was caused by a shock to the Oil Price (X3) variable. In the early period, BPIH responded negatively to shocks originating from oil prices. In periods 2 to 10, BPIH began to respond positively to shocks from oil prices with a fluctuating pattern. This means that BPIH's response to oil prices is not always unidirectional. The negative response in the early period of BPIH moved in the opposite direction; when oil prices rose, BPIH experienced a decline, and vice versa. Meanwhile, the positive response in the following period was fluctuating, meaning that the relationship between the two became unidirectional or directly proportional. An increase in oil prices was responded to by an increase in BPIH, and a decrease in oil prices was responded to by a decrease in BPIH. The fluctuating pattern means that the magnitude of the increase or decrease was not always the same in each period. The sharpest decline in BPIH in response to oil price shocks was recorded in period 3, and the most significant increase was in period 2.

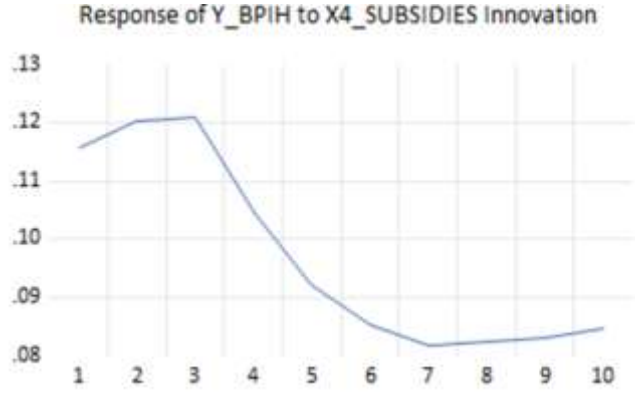

Figure 8. Multi-Graph Results of IRF Test for Government Subsidy Variables
Source: data processed by researchers, 2025

Based on Figure 8 above, it is known that the response given by the BPIH variable (Y) was caused by a shock to the Government Subsidy variable (X4). In the early period, BPIH responded positively to shocks originating from Government Subsidies. In periods 2 to 10, BPIH still responded positively to shocks originating from government subsidies and fluctuated. This means that if there was an increase or the government added 1% to subsidies, BPIH would experience a decline. The magnitude of this fluctuation, whether an increase or a decrease, was not the same in each period and was inversely proportional. The implication is that an increase in government subsidies causes the BPIH to decline and react inversely. The sharpest decline in the BPIH in response to the shock of government subsidies was recorded in period 6, and the most significant increase was in period 3.

Forecast Error Variance Decomposition (FEVD) Test

Forecast Error Variance Decomposition (FEVD) analysis is used to assess the extent to which a variable can contribute to other variables. Through this test, an overview is obtained of the proportion of changes due to shocks from a particular variable that affect other variables, both for the current period and subsequent periods. In this study, the main focus is to evaluate the extent to which the independent variables, namely Inflation, Exchange Rate, Oil Prices, and Government Subsidies, influence the dependent variable, namely the Cost of Performing the Hajj (BPIH). The following are the results of the FEVD analysis based on the research conducted:

Table 7. FEVD Test Results

Period	S.E.	BPIH	Inflation	Exchange Rate	Oil Price	Government Subsidy
1	0,266120	95,77709	4,222914	14,82293	1,740069	29,62501
2	0,276707	92,24355	7,756448	17,77153	14,71984	42,03145
3	0,332371	94,59551	5,404487	20,54624	11,71661	50,04448
4	0,353326	93, 97956	6,020439	21,44906	11,55108	55,71908
5	0,383875	94,42822	5,571776	22,75948	10,62486	57,64421
6	0,406972	94,20177	5,798230	23,19956	11,32401	59,62799
7	0,431154	94,42291	5,577086	23,88995	11, 82787	60,26554
8	0,452883	94,44596	5,554044	24,25614	11,98329	61,21970
9	0,474165	94,52137	5,478626	24,66311	12,09519	61,91570
10	0,494265	94,54308	5,456918	24,95667	12,40177	62,74194

Source: data processed by researchers, 2025

Based on the data in Table 7, it can be concluded that in the first period, the BPIH variable itself contributed the most to the Hajj Pilgrimage Cost (BPIH), namely 95.77709 per cent. Meanwhile, in the same period, Inflation, Exchange Rate, Oil Prices, and Government Subsidies had relatively smaller contributions, with the following details: inflation at 4.222914 per cent, exchange rate at 14.82293 per cent, oil prices at 1.740069 per cent, and Government Subsidies at only 29.62501 per cent. The contribution of shocks from the variables of inflation, exchange rate, oil prices, and government subsidies to BPIH in the following periods was still relatively low or did not show a significant enough effect. In period 10, the shock contribution of the BPIH variables, inflation, exchange rate, oil prices, and

government subsidies are 94.54308 per cent for BPIH itself, 5.456918 per cent for inflation, 24.95667 per cent for exchange rates, 12.40177 per cent for oil prices, and only 62.74194 per cent for government subsidies.

The Effect of Inflation on the Cost of Performing the Hajj (BPIH)

The results of this study conclude that in the short term, the inflation variable has a significant positive effect on the Hajj Pilgrimage Cost (BPIH), with an increase of 0.752368 per cent in lag 1 and 0.126091 per cent in lag 2. Conversely, in the long term, inflation does not have a significant effect on BPIH. Based on these coefficient values, every 1% increase in inflation will result in an increase in BPIH of 0.752368 per cent in the first period and 0.126091 per cent in the second period. This study reveals a difference in the impact of inflation on BPIH between the short and long term. In the short term, inflation has been proven to have a significant positive effect with coefficients of 0.752368 per cent at lag 1 and 0.126091 per cent at lag 2. This shows that a 1 per cent increase in inflation contributes to an increase in BPIH in two consecutive periods. Thus, inflation plays an important role as a major factor driving the increase in the cost of performing the Hajj pilgrimage (BPIH) in the short term, as it triggers price increases in almost all major components of BPIH costs. In contrast to the results in the short term, the long-term analysis shows that inflation has no significant effect on the cost of performing the Hajj pilgrimage (BPIH).This can be explained because, in the long term, professional management of Hajj funds can offset or mitigate the impact of inflation on the Cost of Performing the Hajj (BPIH), so that the effect of inflation on costs becomes insignificant over a longer period of time. In short, this difference occurs because in the short term, inflation greatly affects prices and costs due to prices that have not fully adjusted and supply disruptions, while in the long term, price adjustments, efficient fund management, and well-planned macroeconomic policies can reduce the impact of inflation on the Hajj Pilgrimage Costs (BPIH).

Thus, the results of this study accept hypothesis (H1), which states that inflation has a positive effect on BPIH. Therefore, this study is in line with the results of research conducted by (Mahfudloh, et.al, 2024), which states that the variables of inflation and the rupiah exchange rate simultaneously have a significant effect on the increase in Hajj costs in the city of Surabaya in the 2012-2022 period. In addition, both inflation and the rupiah exchange rate partially have a positive and significant effect on the increase in Hajj costs during the same period in the city of Surabaya.

The Effect of Exchange Rates on the Cost of Performing the Hajj (BPIH)

The results of this study conclude that the exchange rate variable has a significant positive effect on the Cost of Performing the Hajj (BPIH) in both the short and long term. This shows that any increase or decrease in the exchange rate has a direct impact on changes in BPIH. This study also shows that when the exchange rate increases (appreciation), the Hajj Pilgrimage Cost (BPIH) tends to decrease. Conversely, when the exchange rate decreases or weakens (depreciation) of the Rupiah against the US Dollar, the BPIH tends to increase. This is because in the short term, exchange rate fluctuations quickly affect the BPIH because changes in the exchange rate cause the cost of Hajj components to become more expensive or cheaper directly. Meanwhile, in the long term, the exchange rate continues to play an important role because most of the Hajj costs are paid in foreign currency on an ongoing basis, so that changes in the exchange rate have a significant effect on the total costs over a longer period of time.

The results of this study accept hypothesis (H2), which states that the exchange rate has a positive effect on BPIH. This research is in line with the results of a study conducted by Nurunnsakin et al. (2024), which states that currency exchange rates, world oil prices, and inflation have a long-term impact on the Cost of Performing the Hajj (BPIH). Their research found that the exchange rate has a significant positive effect on the cost of the Hajj.

The Effect of Oil Prices on the Cost of Performing the Hajj (BPIH)

The results of this study conclude that in the long term, the variable of world oil prices has a significant positive effect on the Cost of Performing the Hajj (BPIH), with an increase of 0.020427 per cent. Conversely, in the short term, world oil prices do not show a significant effect on BPIH. This study reveals a difference in the impact of world oil prices on BPIH between the short and long term. In the long term, world oil prices are proven to have a significant positive effect with a coefficient of 0.020427 per cent. This shows that a 1 per cent increase in world oil prices contributes to an increase in BPIH. This is because global oil prices play an important role in increasing the Hajj Pilgrimage Cost (BPIH) in the long term

because most of the components of the Hajj cost, especially air transportation, are highly dependent on fuel prices, namely jet fuel and aviation gasoline. When global oil prices rise continuously, fuel costs for flights, which are one of the largest components of BPIH, also increase, thereby directly impacting the total cost of organising the Hajj pilgrimage (BPIH).

The results of this study accept the hypothesis (H3) which states that World Oil Prices have a positive influence on BPIH. So, this study is in line with the results of research conducted by (Budiman, 2016) stating that oil prices (OP) have a relationship with the determination of BPIH with the results of his research showing the variance decomposition function, the contribution level of OP and ER to BPIH are 9.8% and 6.93% respectively which indicates the results of his findings that BPIH is not only influenced by these two variables.

The Effect of Government Subsidies or Benefit Value on the Hajj Pilgrimage Cost (BPIH)

The results of this study concluded that in the long term, government subsidies have a significant positive effect on the Hajj Pilgrimage Cost (BPIH), with an increase of 0.024007 percent. Conversely, in the short term, government subsidies do not significantly affect the BPIH. This study demonstrates a difference in the effect of government subsidies on the Hajj Pilgrimage Cost (BPIH) between the short and long term. In the long term, government subsidies have a significant positive effect with a coefficient of 0.024007 percent. This means that every 1% decrease in government subsidies contributes to an increase in the BPIH. Although additional subsidies are typically intended to lower the cost of the Hajj and maintain affordability, large and continuously increasing subsidies can actually increase the BPIH if not balanced with proper management. The long-term role of government subsidies is crucial in stabilizing and controlling the rise in Hajj costs, ensuring they remain affordable for prospective pilgrims. These subsidies are generally provided to help cover some of the costs of the Hajj journey, such as flights, accommodation, meals, and other services. In contrast to long-term results, short-term analysis shows that government subsidies do not significantly impact the Hajj Pilgrimage Costs (BPIH). This is due to the gradual nature of short-term subsidies, delays in cost adjustments, protection through budget management mechanisms, and the dominance of other macroeconomic factors that more rapidly affect Hajj costs in the short term. Furthermore, the fact remains that subsidy funds or benefit amounts used to help cover some Hajj costs are typically planned for medium- to long-term sustainability, so they do not directly impact the Hajj costs that pilgrims must pay in the short term.

This study accepts hypothesis (H4), which states that government subsidies have a positive effect on the cost of organizing the Hajj pilgrimage (BPIH). This finding is consistent with a previous study by Isabella and Komar (2020), which found that in the long term, the amount of BPIH is influenced by several factors, such as world oil prices and the rupiah exchange rate. These two factors also play a significant role in government subsidy policies in determining the amount of Hajj Costs.

CONCLUSION AND SUGGESTION

Based on the results of data analysis, hypothesis testing, and the discussion outlined above, the conclusion that can be drawn is that the Inflation variable has a significant short-term effect on BPIH, but has no long-term effect on BPIH. Meanwhile, the Exchange Rate variable has a significant effect on BPIH in both the short and long term. Meanwhile, the World Oil Price variable has a significant long-term effect on BPIH, but has no significant effect in the short term. And the Government Subsidy or Benefit Value variable has a significant long-term effect on BPIH, but has no significant effect in the short term.

Based on the analysis results and conclusions obtained, the researcher conveys several suggestions that are expected to provide benefits to related parties, including the Indonesian Ministry of Religious Affairs (Kemenag) and the Hajj Financial Management Agency (BPKH). This research can be used as a reference in determining the amount of BPIH by considering the stability of economic conditions such as inflation, exchange rates, oil prices, targeted government subsidies, and other variables. The effectiveness of Hajj fund management is maximized well, because Indonesia's potential is very large as a sender of the largest group of Hajj pilgrims every year.

For further researchers, this study is expected to be a reference material for further researchers by considering more other macroeconomic variables that influence BPIH, such as Gold Prices, Cost of

Living in Saudi Arabia, etc. So that the results of further research can produce more accurate and in-depth research on the factors suspected of influencing the Cost of Organizing the Hajj Pilgrimage (BPIH).

REFERENCES

Alfiyanti, U., Alhamdani, abdul kodir, & Latip, M. (2023). Manajemen Keuangan Haji Dalam Tinjauan Maqashid Al-Syariah. *J-HES: Jurnal Hukum Ekonomi …*, *1*(2), 32–50.

Anas, K., Nurhayati, W., & Aslichah. (2023). Evaluasi Kebijakan Penyelenggaraan Haji dan Dampaknya Terhadap Pengeluaran Pemerintah Indonesia Tahun 2023. *Mutiara : Jurnal Ilmiah Multidisiplin Indonesia*, *1*(1), 170–183. https://doi.org/10.61404/jimi.v1i1.50

Aziz, R. M., Fitriyani, T., Soeharjoto, S., Nugroho, L., & Parenreng, S. M. (2023). Faktor-Faktor Yang Mempengaruhi Investasi Pengelolaan Dana Haji. *Jesya*, *6*(1), 722–732. https://doi.org/10.36778/jesya.v6i1.1009

Komar, F. (2020). *Kebijakan Penetapan Biaya Penyelenggaraan Ibadah Haji di Indonesia*. *5*(2), 74–79.

Mahfudloh, E. a. (2024). The influence of inflation and the rupiah exchange rate on. *20*(1), 66–83.

Mochammad Arif Budiman, D. B. W. K. (2016). Analisis Faktor Yang Mempengaruhi Biaya Penyelenggaraan Ibadah Analisis Faktor Yang Mempengaruhi Biaya Penyelenggaraan Haji di Indonesia Ibadah Haji di Indonesia. *Jurnal Hukum Islam*, *14*.

Nur Rohmah Hidayati, Hilya Diniya, Mufrodah, Ria Anisatus Sholihah, & Muhammad Taufiq Abadi. (2024). Manajemen Pengelolaan Dana Haji Pada Badan Pengelola Keuangan Haji (Bpkh). *Jurnal Ilmiah Research and Development Student*, *2*(1), 62–71. https://doi.org/10.59024/jis.v2i1.566

Nurunnasikin, N., Indra, I., & Afifah, K. (2024). Analisis Pengaruh Variabel Makroekonomi terhadap Biaya Perjalanan Ibadah Haji. *Bukhori: Kajian Ekonomi Dan Keuangan Islam*, *4*(1), 1–11. https://doi.org/10.35912/bukhori.v4i1.3056

Primadhany, E. F. (2018). Tinjauan Terhadap Tanggung Jawab Badan Pengelola Keuangan Haji (Bpkh) Dalam Melakukan Penempatan Dan/Atau Investasi Keuangan Haji. *Jurisdictie*, *8*(2), 125. https://doi.org/10.18860/j.v8i2.4447

Simorangkir, I. (2004). Sistem dan Kebijakan. In *Sistem dan Kebijakan Nilai Tukar* (Vol. 12, Issue 12).