
ANALYSIS OF THE INTERACTION AND CONTRIBUTION OF ISLAMIC HUMAN DEVELOPMENT INDEX (IHDI) AND TOTAL ISLAMIC BANKING ASSETS IN INDONESIA'S ECONOMIC GROWTH

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ABSTRACT

This study aims to analyze the effect of Islamic Human Development Index (IHDI) and total Islamic banking assets (IBA) on Indonesia's economic growth using Vector Error Correction Model (VECM) analysis. This type of research data uses time series data for the period 2010-2023. This study uses a quantitative approach to Vector Error Correction Model (VECM) analysis. This research is short and long term regression, as well as the Granger causality test to evaluate the relationship between variables. The population in this study reports IHDI, Total Islamic Banking Assets, and economic growth in the period 2010-2023 so that the sample of this study amounted to 168 months analyzed using EViews software. The results showed that in the short term, IHDI and IBA have a positive and significant influence on economic growth. However, in the long run, although the effect is positive, the relationship is not significant. The Granger causality test reveals that the causality relationship is one-way, where IBA affects IHDI and IBA affects PE. This confirms the role of IBA in improving Islamic value-based quality of life and supporting economic growth. In contrast, the causal relationship between IHDI and PE was not shown to be significant in either direction. This study recommends increasing Islamic financial literacy, strengthening regulations that support IBA growth, and integrating IHDI into development policies to create inclusive and sustainable economic growth. These findings are relevant in developing development strategies based on Islamic values for Indonesian society.

KEYWORDS

Islamic Human Development Index (IHDI), Islamic Banking Assets (IBA), Economic Growth



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INTRODUCTION

Indonesia's economic growth over the period 2010 to 2023 showed complex dynamics, influenced by various external and internal factors. In 2020, the COVID-19 pandemic caused a sharp decline in economic activity, with Gross Domestic Product (GDP) falling to IDR 560.231 trillion. However, a significant recovery occurred in the following years, with GDP increasing to IDR 5,184.622 trillion in 2023. This recovery was supported by expansionary fiscal policy and the growing contribution of the Islamic financial sector (Dalimunthe & Imsar, 2023). A country's ability to sustain growth reflects its capacity to improve living standards and address the needs of its population. Continued economic expansion is seen as a strategy for increasing per capita output, which in turn, improves the overall welfare of society (Aqwa Naser Daulay et al., 2024).

As important indicators of Islamic development, the Islamic Human Development Index (IHDI) and Total Islamic Banking Assets (TBAs) play a significant role in supporting economic growth. The IHDI, which reflects the material and spiritual dimensions of human development, shows a consistent increase from 0.59 in 2010 to 0.80 in 2023, reflecting the success of more holistic human development policies (Rahman & Munir, 2020) (Nugroho, 2018).

The Islamic Human Development Index (IHDI) was introduced as an alternative that holistically represents human development from an Islamic perspective, which includes spiritual and religious values in addition to economic, educational and health dimensions. According to Nugroho (2018) and Muhammad Anwar (2011), the IHDI provides a comprehensive approach to human development by incorporating the spiritual dimension, which is an important element in Islam. This is in line with the principles in the Qur'an:

"Indeed, those who believe and do righteous deeds, they are the best of

 **اِنَّ الَّذِيْنَ اٰمَنُوْا وَعَمِلُوا الصّٰلِحٰتِ اُوْلٰئِكَ هُم خَيْرُ الْبَرِيَّةِ**

creatures." (Q.S. Al-Bayyinah: 7)

This verse emphasizes the balance between faith and good deeds, which forms the basis of the IHDI as an index aligned with Islamic values.

Meanwhile, IBA also showed rapid growth, increasing from IDR 402,713 billion in 2010 to IDR 2,539,391 billion in 2022, reflecting the significant role of the Islamic financial sector in supporting financial inclusion and social development (Imsar et al., 2023) (OJK, 2023).

Table 1. IHDI, IBA, and Economic Growth (PE) Data 2010-2023

Year	IHDI	Total IBA (IDR Billion)	PE (IDR Trillion)
2010	0.59	402.713	658.819
2011	0.61	414.125	848.474

Year	IHDI	Total IBA (IDR Billion)	PE (IDR Trillion)
2012	0.61	841.789	911.463
2013	0.61	623.309	919.980
2014	0.60	104.344	934.117
2015	0.62	587.025	857.872
2016	0.63	240.996	897.220
2017	0.65	395.567	986.685
2018	0.67	453.946	1,021.752
2019	0.69	597.304	1,106.637
2020	0.67	1,545.723	560.231
2021	0.66	1,834.651	3,139.799
2022	0.72	2,539.391	4,639.833
2023	0.80	1,841.431	5,184.622

Previous research has discussed the relationship between economic growth and human development, but most of these studies have failed to highlight the spiritual dimension and the role of the Islamic financial sector as an integral part of Islamic-based economic development. For example:

1. Dalimunthe and Imsar (2023): Focuses on the effect of poverty and government spending on IHDI, but does not discuss in depth the interaction between IBA and economic growth.
2. Rahman and Munir (2020): Emphasizes the application of IHDI in sustainable development, but has not explored how IHDI and IBA simultaneously contribute to GDP.
3. Imsar et al. (2023): Discusses the relationship between IHDI, digital economy, and investment to GDP, but does not explore the specific contribution of the Islamic finance sector to human development.

This study seeks to fill the gap by analyzing the dynamic relationship between IHDI and IBA and its effect on Economic Growth (PE). Using the Vector Error Correction Model (VECM) approach, this study provides insight into the short- and long-term relationship between these variables, as well as their contribution to Islamic value-based economic development.

This research aims to:

1. Analyzing the effect of IHDI on Indonesia's economic growth within the framework of Islamic economics.
2. Examine the role of IBA in supporting Indonesia's economic growth.
3. Identify the combined impact of IHDI and IBA on Indonesia's economic growth to provide policy recommendations relevant to sharia principles.

This research is relevant as it introduces the spiritual dimension into the analysis of economic development, while highlighting the importance of the Islamic financial sector as a key pillar in realizing an inclusive and sustainable economy (Harahap et al., 2022)(Nugroho, 2018)(Sudarsono & Choliq, 2019).

Theoretical Studies

Economic Growth

Economic growth is a fundamental aspect of a country's economic policy that reflects economic prosperity and progress. In the context of the Indonesian economy, increased economic growth is an important indicator measured by Gross Domestic Product (GDP) and is expected to improve income distribution and create equitable economic opportunities (Khairina Tambunan et al., 2024). The growth of the Islamic economy involves the halal food and beverage, modest fashion, cosmetics, pharmaceuticals, media and leisure, and tourism sectors. This growth is expected to reach US\$2.8 trillion by 2025, an increase of 7.5% (CAGR) (IDN Financial, 2022). This fact is reinforced by Bank Indonesia (BI) data in the Indonesia Halal Market Report 2021/2022, noting the potential contribution of the Islamic economy totaling US\$5.1 billion to national GDP through halal product exports, foreign investment growth, and import substitution (IDN Financial, 2022).

The Annual Islamic Finance Conference (AIFC) report reveals that in the last decade, Islamic finance has become one of the fastest growing sectors in the global financial industry, surpassing conventional financial markets (Imsar et al., 2024).

Solow's (1956) classical model provides a foundation for understanding how capital, labor, and technology drive economic growth, emphasizing the importance of investment in infrastructure and human capital development to maintain long-term economic stability.

Recent studies show that innovation, investment and infrastructure development are factors that contribute significantly to economic growth (Journal of Economic Development, 2021). Moreover, in the view of classical and Keynesian theories, changes in variables such as the level of government spending and the interest rate affect the dynamics of aggregate demand as well as aggregate supply, which impacts the rate of economic growth. Some relevant theories of economic growth are as follows:

Classical Growth Theory

This theory emphasizes the relationship between the amount of labor and output (GDP). According to Adam Smith, output growth is determined by labor, capital, and land. Output growth is driven by population growth and investment (Isnaini Harahap, 2023).

Keynesian Theory

Keynesian theory explains the relationship between aggregate demand and aggregate supply in the short run. Economic growth can be affected by changes in expectations, available labor, and fiscal monetary policy. However, this relationship shows a negative impact in the long run (Mankiw, 2016).

Neo-Classical Theory

This theory emphasizes the importance of capital accumulation and productivity in economic growth. In this context, inflation and inflation expectations affect people's wealth, encouraging individuals to invest and increase capital accumulation (Romer, 1990).

Neo-Keynesian Theory

Neo-Keynesians developed the concept of 'potential output', which is the optimal output level of an economy. This theory argues that government intervention is necessary to maximize the growth potential of the economy (Blanchard & Johnson, 2013).

Endogenous Growth Theory

This theory explains that economic growth is generated by factors in the production process, such as innovation and investment in human capital. Unlike the exogenous theory, growth in this theory is highly dependent on the rate of return on capital (Romer, 1986).

Islamic Economic Growth Theory

Islamic economic growth theory emphasizes the importance of moral and ethical values in economic development. It focuses on public welfare, social justice, and equitable distribution of wealth, which is in line with the principles of sharia. Economic growth in the Islamic framework includes two dimensions: material and spiritual growth. In this context, collaboration between conventional and Islamic financial systems is key to creating a sustainable growth model.

Several studies have shown that synergies between conventional and Islamic banking can increase financial inclusion and facilitate investment in productive sectors. For example, the use of Islamic financial instruments such as sukuk and mudharabah can help increase liquidity and support development projects that have a positive social impact (Khan & Bhatti, 2008). In this sense, the two financial systems can complement each other, with Islamic banking offering a more ethical and sustainable investment alternative.

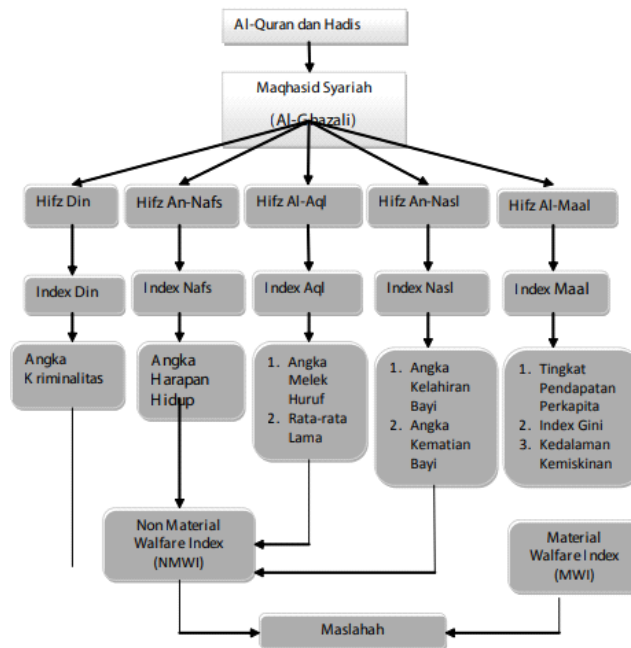
IHDI (Islamic Development Index)

Based on Maqasid Shari'ah, the Islamic concept of human development centers on two aspects: material and moral. Islam recognizes two human needs: first, worldly, which is for material consumption and facilities to produce as much as possible. The second is the spiritual, which is the moral, ethical, and social aspects of life, and this is fully permitted and freely expressed in order to fulfill humanity's urges with moral and ideal, ethical and social choices, and to strive to achieve them. To create not only what nature provides, but also as something of beauty in the world, and also the ultimate expression of love. To realize this requires great sacrifice. These two types of needs can be in conflict, but they are essentially interconnected to sustain human existence.

Measurement of human development with the Maqhasid sharia approach has been widely proposed by Islamic thinkers such as Al-Ghazali (1937), Ibn Ashur (2001) Dusuki and Abozaid (2007) Al - Syatibi (2004), Alhabsi and Hassan (1996), Chapra (2008), and Choudhury (2014). Where classical scholars, especially Al-Ghazali and Al-Syatibi summarize in five basic safeguards in life or with the term al- kulliyah al-khamsah, namely protecting religion (hifl al-din), protecting the soul

(hifl al-nafs), protecting the mind (hifl al-'aql), protecting offspring (hifl al-nasl) and protecting property (hifl al-māl).

Kerangka Konsep dan Indikator *Islamic Human Development Index*



Source: Haqiqi Rafsanjani (2014) Hendri Anto (2010)

With the measurement of Islamic human development (I-HDI) which is more holistic, covering all aspects of human needs based on Maqhasid Sharia, it is hoped that it can contribute to the development of a more comprehensive concept of development patterns to be carried out, especially in Muslim-majority countries. The Islamic Human Development Index divides the need for human welfare into two charts, namely Material Welfare (Material Welfare) and Non-Material Welfare (Non-Material Welfare).

Total Islamic Banking Assets

Islamic banking plays an important role in Indonesia's financial system, being one of the pillars that support financial inclusion based on sharia principles. The growing total assets of Islamic banking reflect the confidence of the public and the ability of these institutions to provide sharia-compliant financial products and services. Islamic banking assets serve not only as resources that support financial operations, but also as instruments to achieve broader economic goals, such as social justice and sustainable growth (Muhammad Ikhsan Harahap, 2022).

Assets in Islamic banking include various financial instruments that comply with sharia principles, such as profit-sharing-based financing (*mudharabah* and *musyarakah*) and financing supported by real assets. In this context, Islamic banking offers investment alternatives that avoid the practice of usury (interest), excessive speculation, and business activities prohibited by sharia. Therefore,

Islamic banking assets not only function to earn profits, but also to provide social benefits and encourage productive economic activities. The growth of total Islamic banking assets in Indonesia has shown a positive trend in recent years. According to data from the Financial Services Authority (OJK), total Islamic banking assets at the end of 2022 reached around Rp 600 trillion, with significant growth compared to previous years. This reflects the increasing public interest in financial products that comply with Islamic values.

The study by Ahmad and Hassan (2020) shows that Islamic banking can contribute to economic stability. In their study, the authors emphasized that the principle of fair profit sharing in Islamic banking reduces financial risks and provides more equitable benefits for all parties involved. In other words, Islamic banking assets serve as a bridge to create a balance between economic growth and social justice.

Research by Zainudin et al. (2019) highlights the importance of Islamic banking assets backed by real assets in creating economic sustainability. Real assets, such as property and infrastructure, provide a stronger basis for investment, thus helping to reduce the risks faced by financial institutions. These real-based Islamic banking assets not only provide financial stability, but also contribute to the development of infrastructure that is essential for economic growth. Islamic banking also demonstrates a high commitment to social welfare. Through various corporate social responsibility (CSR) programs and products that focus on financing for productive sectors, Islamic banking institutions seek to improve the quality of life of the community. In this context, Islamic banking assets become an effective instrument in creating positive social impact.

In the Qur'an, there are principles that support the use of assets in accordance with sharia rules, one of which is the prohibition of usury. In Surah Al-Baqarah (2:275):

Meaning:

الَّذِينَ يَأْكُلُونَ الرِّبَا لَا يَقُومُونَ إِلَّا كَمَا يَقُومُ الَّذِي يَتَخَبَّطُهُ الشَّيْطَانُ مِنَ الْمَسِّ ذَلِكَ بِأَنَّهُمْ قَالُوا إِنَّمَا الْبَيْعُ مِثْلُ الرِّبَا وَأَحَلَّ اللَّهُ الْبَيْعَ وَحَرَّمَ الرِّبَا فَمَنْ جَاءَهُ مَوْعِظَةٌ مِنْ رَبِّهِ فَانْتَهَى فَلَهُ مَا سَلَفَ وَأَمْرُهُ إِلَى اللَّهِ وَمَنْ عَادَ فَأُولَئِكَ أَصْحَابُ النَّارِ هُمْ فِيهَا خَالِدُونَ

Those who eat usury cannot stand except as one who staggers because of a demon. This is because they say that buying and selling is the same as usury. Yet, Allah has justified buying and selling and forbidden usury. If a warning from his Lord comes to him (concerning usury), then he stops, and what he used to earn is his, and it is up to Allah. Whoever repeats (the usury transaction), they are the inhabitants of Hell. They will remain therein forever.

This verse shows the importance of avoiding usury practices and opting for fairer and more ethical transactions.

RESEARCH METHOD

This study adopts a quantitative methodology to examine the interaction and contribution of the Islamic Human Development Index (IHDI) and Total Islamic Banking Assets to Economic Growth in Indonesia during the period 2010-2023. This approach aims to gain a deeper understanding of the dynamics of the Islamic economy and its impact on the national economy as a whole. This research is based on the philosophy of positivism, where hypothesis testing is done through empirical data collection and statistical analysis to obtain objective results.

This study uses secondary data that is time series or time series over a 14-year period, from 2010 to 2023. Data sources Islamic Human Development Index (IHDI) Taken from official publications of research institutions or government agencies that study human development from a sharia perspective. Total Islamic Banking Assets Data obtained from the annual reports of Bank Indonesia (BI) and the Financial Services Authority (OJK), which reflect the total value of assets held by Islamic banks in Indonesia. Economic Growth Data on Indonesia's Gross Domestic Product (GDP) at constant prices was taken from the Central Bureau of Statistics (BPS) website.

Given the nature of the data used, this study does not apply sampling techniques because it involves analyzing the entire time series data available for the research variables during the study period. Dependent Variable Economic Growth (measured through GDP at constant prices). Independent Variable Islamic Human Development Index (IHDI) and Total Islamic Banking Assets.

Sims, C. A. (1980). "Macroeconomics and Reality." *Econometrica*, Introducing the use of VAR models in econometrics to analyze the dynamic relationship between economic variables. Data analysis is conducted using the Vector AutoRegression (VAR) method, which allows the research to capture the dynamic relationship between the variables under study as well as evaluate the contribution of each independent variable to the dependent variable. The VAR method was chosen for its superiority in analyzing the relationship between variables in a complex and interdependent economic system. Before conducting the VAR analysis, stationarity tests will be conducted on all data series using the Augmented Dickey-Fuller (ADF) Unit Root Test to ensure that all variables in the model are stationary. If necessary, data transformation will be performed to achieve stationarity. Further analysis includes VAR model estimation, Granger causality test, and imputed response function analysis to assess the impact of changes in IHDI and Total Islamic Banking Assets on Indonesia's Economic Growth. This study will also apply Predicted Variance Decomposition to explore the relative contribution of each independent variable to the variability in the dependent variable. The analysis technique used is the Vector Error Correction Model (VECM) approach to look at the relationship between variables that represent indicators of economic growth. The VECM analysis method was first popularized by Engle and Granger to correct short-term imbalances against the long run. So that VECM can be used to see the short-term and long-term relationship of a time series data. VECM is a Vector Error Correction Model (VECM) analysis designed to be used on non-stationary data known to have a cointegration relationship, in other words, VECM can be said to be a restricted form of VAR (Saputra and Sukmawati 2021).

Vector Error Correction Model (VECM) analysis is an important procedure in econometric research for time series data. The following are the recommended analytical steps:

- **Stationarity Test**

The key in time series analysis is to ensure that the data is stationary. The Augmented Dickey Fuller (ADF) method is often used to test for the presence of a unit root, which is an indicator of non-stationarity (Gujarati & Porter, 2009).

- **Optimum Lag Selection**

Determining the appropriate number of lags is critical in building an accurate VAR/VECM model, usually chosen based on criteria such as AIC and BIC (Schwarz, 1978).

- **VAR Stability Test**

A VAR model must be stable to be valid. This is usually checked through the eigenvalues of the VAR matrix (Lütkepohl, 2005).

- **Granger Causality Test**

This method evaluates the causal relationship between variables, which is important for understanding economic dynamics (Granger, 1969).

- **Cointegration Test**

The Johansen test is a standard method for identifying cointegration relationships among non-stationary variables (Johansen, 1988).

- **Impulse Response Function (IRF)**

IRF is used to see how much impact one variable has on another when the first variable receives a shock (Sims, 1980).

- **Predicted Variance Decomposition (FEVD)**

FEVD helps decipher how much of the variability in each variable can be explained by innovations in other variables in the system (Lütkepohl, 2005).

Research using VECM allows for a more comprehensive analysis of the long-run relationships and short-run adjustments between economic variables (Enders, 2004)."

RESULT AND DISCUSSION

Data Stationarity Test

Table 1. Stationary Test with ADF Test at Level

Variable	Probability	Stationary Test Results at Level
IHDI	0.9996	p>0.05 (Data Not Stationary at Level)
IBA	0.6245	p>0.05 (Data Not Stationary at Level)
PE	0.9919	p>0.05 (Data Not Stationary at Level)

Based on the stationary test results in Table 1, it is known that IHDI, IBA, and PE data are not stationary at the level, with all p values > 0.05. IHDI, IBA, and PE data are tested again for stationary at first difference.

Table 2. Stationary Test with ADF Test at first difference

Variables	Probability	Stationary Test Results at first difference
IHDI	0.5921	p>0.05 (Data Not Stationary at first difference)
IBA	0.0341	p>0.05 (Data Stationary at first difference)
PE	0.0555	p>0.05 (Data Not Stationary at first difference)

Based on the stationary test results in Table 2, it is known that IHDI, IBA, and PE data are not stationary in the first difference, with all p values > 0.05. The IHDI, IBA, and PE data were tested again for stationary at the second difference.

Table 3. Stationary Test with ADF Test on Second difference

Variables	Probability	Stationary Test Results at first difference
IHDI	0.0000	p>0.05 (Data Stationary at Second difference)
IBA	0.0000	p>0.05 (Data Stationary at Second difference)
PE	0.0000	p>0.05 (Data Stationary at Second difference)

Based on the stationary test results in Table 3, it is known that the IHDI, IBA, and PE data are stationary at Second Difference, with all p values <0.05, so the test continues to the Optimal Lag determination stage.

Optimum Lag Selection

Determining the appropriate number of lags is critical in building an accurate VAR/VECM model, usually chosen based on criteria such as AIC and BIC (Schwarz, 1978).

Table 4. Optimum Lag Testing Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-4497.212	NA	9.83e+19	54.54802	54.60450	54.57095
1	-3204.000	2523.723	1.71e+13	38.98181	39.20770	39.07351
2	-3152.984	97.70246	1.03e+13	38.47254	*38.86784	38.63300
3	-3135.257	*33.30546	*9.23e+12	*38.36675	38.93147	*38.59599

Based on table 4, estimation with the VAR model requires the data to be stationary. Because the variable data is stationary at the 2st Difference level, the expected estimation will produce valid model output as well. Thus the research conclusions will have a high level of validity. Estimation of the VAR model begins with determining how many lag lengths are appropriate in the VAR model. Determining the length is important in VAR modeling. If the optimal lag entered is too short, it is feared that it will not be able to explain the dynamism of the model as a whole. However, an optimal lag that is too long will also result in an inefficient estimation of the reduced model with a small sample. Therefore, researchers need to know the optimal lag before estimating VAR. Therefore, based on the optimal lag test using the AIC criterion, the researcher uses the optimal lag of 3. Because as stated in the table above, where the small criterion of Akaike Information Criterion

(AIC) is 38.36675 and the most symbol (*) is located at lag 3 (three). So, the recommended optimal lag length is lag 3.

VAR Stability Test

Table 5. VAR Stability Test Results

Root	Modulus
0.996553	0.996553
0.823215	0.823215
0.578530 - 0.101345i	0.587340
0.578530 + 0.101345i	0.587340
-0.419943	0.419943
-0.344808 - 0.034369i	0.346517
-0.344808 + 0.034369i	0.346517

Based on table 5, in testing whether or not the VAR estimate has been determined, a VAR *condition stability check* is carried out in the form of *roots of characteristic polynominal*. A VAR model is said to be stable if all of its roots have a modulus smaller than 1, this is according to experts, namely Gujarati. From the table above, it can be seen that there is no characteristic root value and modulus that is more than 1. Then the results of the data stability test are successful.

Granger Causality Test

Table 6. Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
IBA does Granger Cause IHDI	165	4.09475	0.0184
IHDI does not Granger Cause IBA		1.31032	0.2726
PE does not Granger Cause IHDI	165	18.2054	7.E-08
IHDI does not Granger Cause PE		0.35330	0.7029
PE does not Granger Cause IBA	165	1.75647	0.1759
IBA does Granger Cause PE		4.09056	0.0185

Based on table 6, it is known that those that have a causal relationship are those that have a probability value that is smaller than the alpha value (0.05). then the *Granger Causality Test* above can determine the causal relationship as follows:

- Based on the results of the *granger causality* test table between Islamic banking assets and IHDI, the Islamic banking assets variable has a relationship with IHDI because the probability value is smaller than the alpha level (0.05). Thus, IHDI does not have a relationship with the Islamic banking assets variable because the probability value is greater than the alpha value

(0.05). Based on the latest data from the Financial Services Authority (OJK), Islamic banking assets in Indonesia continue to experience significant growth. In 2023, Islamic banking assets increased by 15.8% compared to the previous year. This growth shows that Islamic banking has an increasingly important role in the national economy, including in supporting the improvement of people's quality of life, as measured by the Islamic Human Development Index (IHDI). Granger causality that shows a one-way relationship between Islamic banking assets (IBA) and IHDI indicates that IBA growth is significant in influencing IHDI. This means that the increase in Islamic banking assets, which reflects the growth of the Islamic financial sector, contributes to the improvement of socio-economic indicators of society in line with the principles of Islamic economics, such as welfare equity and financial inclusion. With the support of the Islamic banking sector, people can more easily access sharia-based financial services that are more inclusive, which in turn contributes to an increase in IHDI. However, IHDI does not show a two-way relationship with IBA, which suggests that an increase in IHDI does not directly affect Islamic banking assets.

- Based on the results of the *granger causality* test table between economic growth and IHDI, economic growth and IHDI do not have a causal relationship, because the probability value of the Granger test is greater than alpha 0.05. This applies both ways, both for economic growth to IHDI and vice versa. Thus, it can be concluded that there is no causal relationship between the two.
- Based on the results of the *granger causality* test table between economic growth and Islamic banking assets, the economic growth variable has no relationship with Islamic banking assets because the probability value is greater than the alpha level (0.05). Likewise, Islamic banking assets have a relationship with the economic growth variable because the probability value is smaller than the alpha value (0.05). Based on the Granger causality test results between Islamic banking assets (IBA) and economic growth (PE), a unidirectional relationship is found where IBA significantly affects PE. This means that the development of Islamic banking assets has an important role in supporting economic growth in Indonesia. Based on the latest data from the Financial Services Authority (OJK), the total assets of Indonesia's Islamic financial industry in 2023 reached around IDR 2,500 trillion. Of this amount, the Islamic banking sector contributed around IDR 892 trillion. In addition, the Islamic capital market also made a significant contribution with assets of Rp 1,500 trillion ([Republika Online](#)) ([Antara News](#)).

The significant increase in Islamic banking assets reflects the sector's ability to provide sustainable and inclusive financing, which encourages investment and consumption in the real sector, and reduces dependence on the conventional financial system. This supports the hypothesis that Islamic banking plays an important role in accelerating economic growth, especially in countries with Muslim-majority populations such as Indonesia. Thus, an increase in IBA can directly facilitate economic growth through increased access to financing that is

more compliant with sharia principles, which in turn increases economic activity in the real sector.

Cointegration Test

Table 7. Co-INTEGRATION TEST RESULTS

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.
None*	0.187828	39.89852	29.79707	0.0025
At most 1	0.023532	5.571498	15.49471	0.7455
At most 2	0.009904	1.642387	3.841466	0.2000
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Based on the lag length above, the cointegration test is to determine whether there will be a balance in the long run, that is, there is a similarity of movement and stability between the variables in this study or not. The cointegration test itself is carried out using the *Johansen's Cointegration Test* method. The following table presents the results of the cointegration test using the *Johansen's Cointegration Test* method.

Based on the table above, it can be seen that the trace statistic value is greater than the critical value with a significance level of 5%. This means that the null hypothesis stating that there is cointegration is accepted and the alternative hypothesis stating that there is cointegration is rejected. So it can be concluded that the variables are cointegrated and have a long-term relationship. If there is a cointegration then we will continue with the VAR form of VECM.

VAR VECM

Table 8. VECM Estimate Test Results

Variables	R.Square	t-statistic	t-table
Short Term			
IHDI	0.194190	2.22632	1.972.663
IBA	0.285496	2.08605	
Long Term			
IHDI	2.246060	0.81430	1.972.663
IBA	0.395418	0.70524	

Based on table 8, the analysis of the effect of the *Islamic Human Development Index* (IHDI) and Islamic banking assets (IBA) on Indonesia's economic growth, both in the short and long term, can be interpreted as follows:

Short Term:

- **IHDI:** With an R.Square value of 0.194190 and a t-statistic of 2.22632, IHDI has a positive and significant effect on economic growth as the t-count value is greater than the t-table (1.972). This means that a one-unit increase in the IHDI contributes directly to an increase in economic growth, suggesting that investments in education, health, and welfare have an immediate impact on productivity and economic growth.
- **IBA:** R.Square IBA of 0.285496 with a t-statistic of 2.08605 also shows a positive and significant effect on economic growth in the short run. This indicates that Islamic banking which focuses on real sector financing and financial inclusiveness has a direct effect on economic growth. Financing productive businesses through IBA creates a rapid circulation of funds in the real sector.

Long Term:

- **IHDI:** Although the effect is positive, with an R.Square of 0.2246060 and a t-statistic of 0.81430, the IHDI is not significant in the long run. This indicates that the impact of human development on economic growth takes longer to be realized. Although the direction of the relationship is positive, the full impact of education and health will only be felt as the overall quality of life and competitiveness of people develops.
- **IBA:** Islamic banking assets has an R.Square of 0.395418 with a t-statistic of 0.70524, which shows that its effect on economic growth in the long run is also insignificant. This suggests that although IBA continues to grow, its effectiveness in supporting economic growth requires more time and scale-up as well as wider penetration.

Overall, in the short run, both IHDI and IBA show a more significant influence on economic growth due to the direct effect of improved quality of life and real sector financing. However, in the long run, although the direction of the effect is positive, the significant contribution of both variables takes longer to show, mainly due to the various structural challenges faced by the Islamic finance and human development sectors.

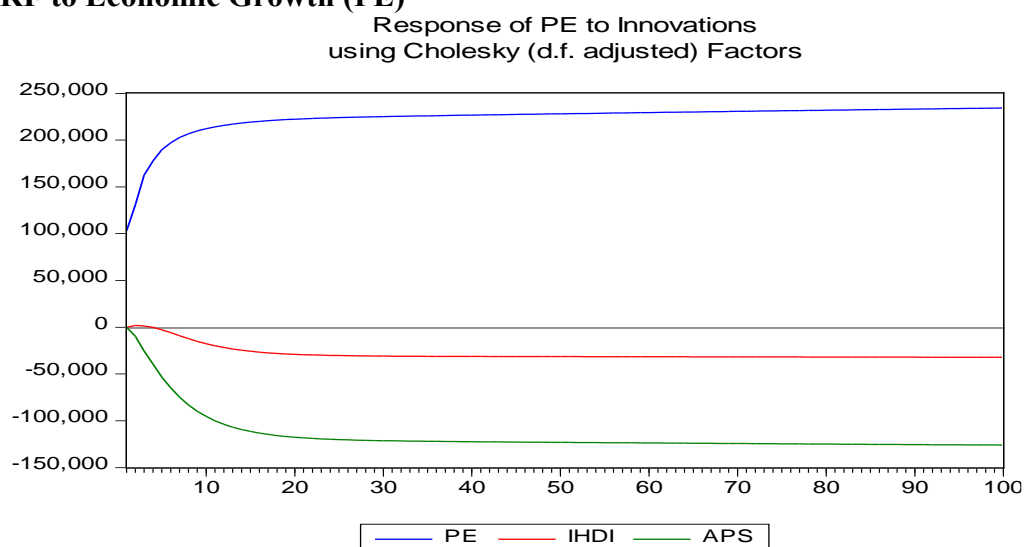
Research by Imsar et al. (2023) and Alkaf et al. (2020) support these findings by emphasizing that the Islamic finance sector and human development require policy strengthening and efficiency improvements to make their impact more significant in the long run.

Impulse Response Function (IRF)

According to Kirchner (2022), IRF is used to understand the system response to input shocks based on *time series* data. In the context of this study, IRF is applied to evaluate the dynamic relationship between economic growth (*PE*), *Islamic*

Human Development Index (IHDI), and total Islamic banking assets (*IBA*). The analysis was conducted using EViews software with a time horizon of 100 periods.

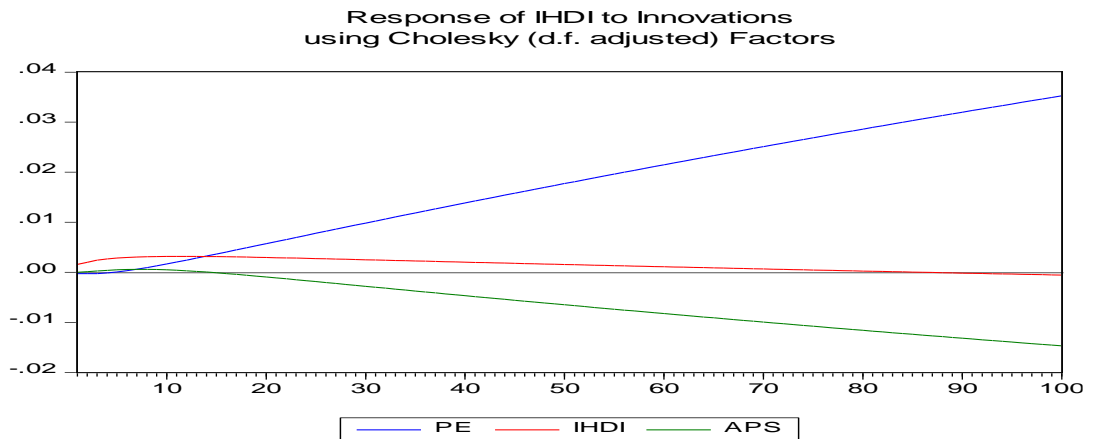
IRF to Economic Growth (PE)



The IRF results show that economic growth responds volatile to shocks from other variables.

- **Short-Term Response:** In the first period, economic growth experiences the largest shock from itself, with a positive value of 102983.6. This response confirms that an initial change in economic growth has an immediate and significant impact.
- **Response of Other Variables:** In the second period, economic growth responded positively (130773.5), while the response to IHDI (+1895.324) and IBA (-9681.660) showed directional variation.
- **Long-term Stability:** Although volatile at the beginning of the period, PE shows a stable trend until the 100th period, with a *decoupling* phenomenon between PE and other variables.

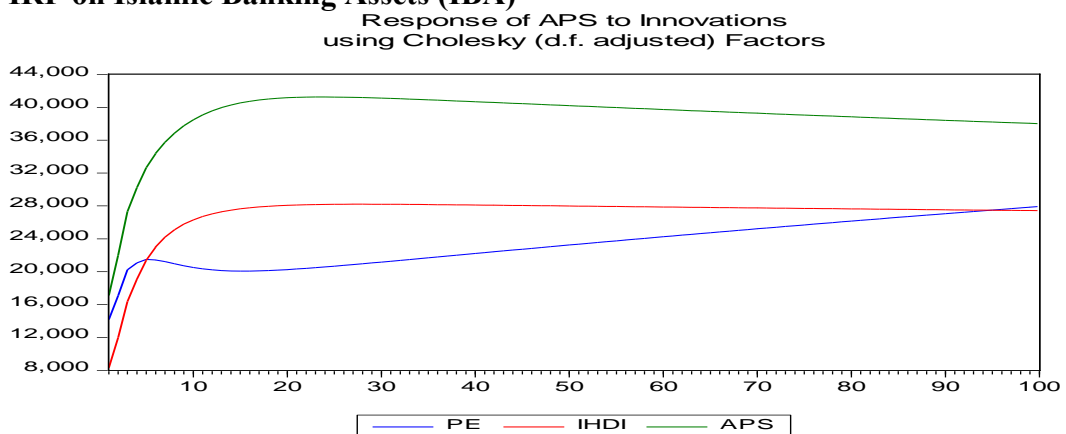
IRF to IHDI



IRF analysis reveals that IHDI responds volatile to shocks from PE, IHDI, and IBA.

- **Initial Response:** In the first period, IHDI responds positively to PE with a value of 0.001574.
- **Decoupling phenomenon:** The response to PE turns negative from the 86th to the 100th period, indicating a weakening relationship between the two variables.
- **Equilibrium:** The IHDI did not reach equilibrium until the end of the period, signaling the need for more time to reflect the significant impact of PE changes.

IRF on Islamic Banking Assets (IBA)



The IRF results show that IBA responds positively to economic growth throughout the analysis period.

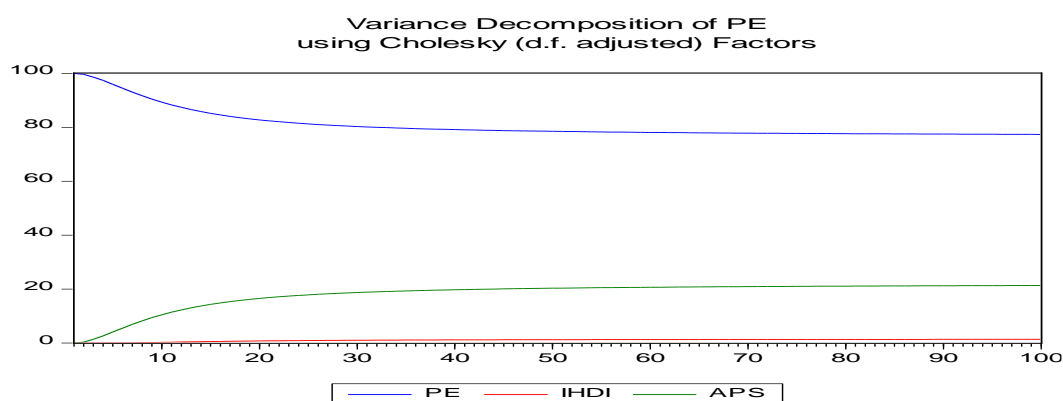
- **Short-Term Response:** In the first period, IBA shows a significant positive response to PE of 17114.71.
- **Response to Other Variables:** In the second period, the largest response comes from IBA itself (21981.93), followed by PE (17070.65) and IHDI (11972.78).

- **Stability and Strong Relationship:** Although volatile, IBA shows a strong relationship with PE, leading to equilibrium after the initial shock.

Forecast Error Variance Decomposition (FEVD)

Forecast Error Variance Decomposition (FEVD) is used to decompose the variation of one endogenous variable into shock components coming from other endogenous variables in a VAR system. This method helps explain the proportion of change in a variable that is caused by shocks from the variable itself compared to shocks from other variables. The following are the results and FEVD analysis for the variables of Economic Growth (*PE*), *Islamic Human Development Index* (*IHDI*), and Islamic Banking Assets (*IBA*).

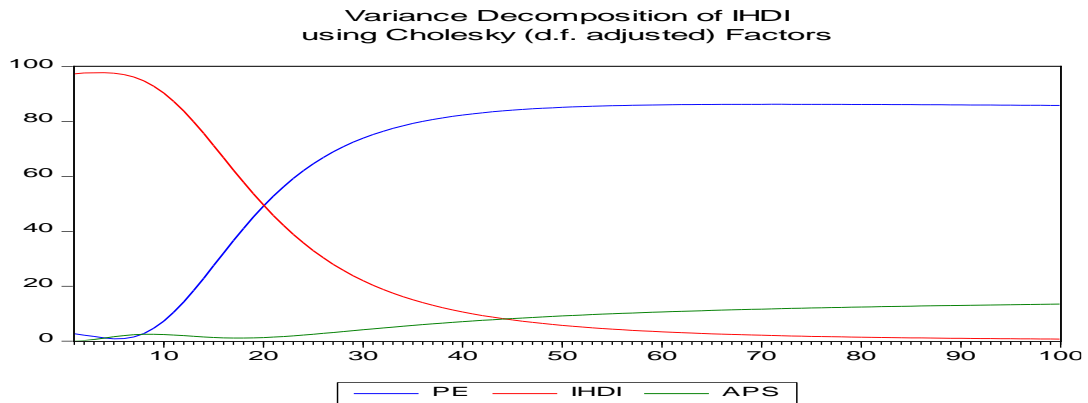
Variance Decomposition of Economic Growth (PE)



In the early period, the variation in economic growth is fully explained by the shocks themselves, with a contribution of **100%**. However, over time, the proportion of this effect decreases gradually to **77.35%** in the final period.

- **The role of IBA:** Islamic banking assets contribute significantly in explaining the variation of PE, amounting to **21.30%** in the final period, indicating the direct influence of IBA on the dynamics of economic growth.
- **Role of IHDI:** The contribution of the IHDI is relatively small at only **1.33%**, indicating that human development indicators take longer to have a significant impact on economic growth.

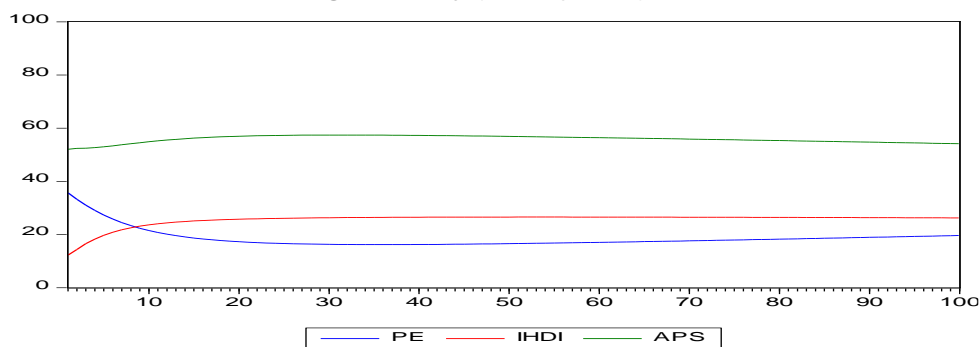
Variance Decomposition of the Islamic Human Development Index (IHDI)



In the early period, the variation of IHDI is fully explained by itself (100%). However, over time, the effect of IHDI on itself decreases to 35.77% in the final period.

- **The role of PE:** Economic growth is the dominant factor affecting IHDI in the long run, with a contribution of 49.59%. This suggests that human development is strongly associated with stable economic growth.
- **Role of IBA:** Islamic banking assets also contributed significantly to the variation in IHDI, at 14.66%, highlighting the importance of Islamic financial inclusion in supporting human development.

Variance Decomposition of Islamic Banking Assets (IBA)
Variance Decomposition of APS
using Cholesky (d.f. adjusted) Factors



In the early period, most of the variation in IBA was explained by itself (52.06%). This proportion increased to 54.13% in the final period, showing the dominant influence of IBA on itself.

- **The role of IHDI:** Islamic Human Development Index contributed significantly by 26.24% to IBA in the final period, confirming that improving the quality of human development can drive the growth of Islamic banking assets.
- **The role of PE:** Economic growth also contributed 19.61%, signaling a close relationship between the Islamic finance sector and macroeconomic conditions.

Discussion

1. The Effect of Islamic Banking Assets on Economic Growth

- **Short Term:** Islamic Banking Assets (IBA) have a positive and significant effect on economic growth (PE), with an R-Square value of 0.285496 and a t-statistic of 2.08605 which is greater than the t-table (1.972). This indicates that the increase in Islamic banking assets directly contributes to economic growth, especially through real sector financing and financial inclusiveness that increases economic activity in a short period of time.
- **Long-Term:** Although the direction of the effect is positive, the effect of IBA on PE is not significant in the long run, with an R-Square value of 0.395418 and a t-statistic of 0.70524 which is smaller than the t-table. This suggests that the effectiveness of IBA in supporting economic growth takes longer, with the need for scale and wider service penetration.

2. Effect of IHDI on PE

- **Short Term:** The Islamic Human Development Index (IHDI) shows a positive and significant effect on economic growth, with an R-Square value of 0.194190 and a t-statistic of 2.22632 which is greater than the t-table (1.972). This indicates that investments in education, health and welfare have a direct impact on productivity and economic growth.
- **Long Term:** In the long run, the effect of IHDI on PE is positive but insignificant, with an R-Square value of 0.246060 and a t-statistic of 0.81430 which is smaller than the t-table. This indicates that the impact of human development on economic growth takes longer to be realized, and significant effects are only seen with the overall improvement of human quality of life and competitiveness.

3. Granger causality test of IBA on PE

Based on the Granger causality test results, there is a one-way causality relationship from IBA to PE, with a probability value of 0.0185 which is smaller than alpha 0.05. This indicates that an increase in Islamic banking assets significantly affects economic growth. In accordance with endogenous growth theory, a developed financial sector, such as Islamic banking, is able to encourage capital accumulation and productivity in the real sector, which in turn accelerates economic growth (Romer, 1990). The study of Alkaf et al. (2020) also reinforces that the Islamic banking sector has a strategic role in supporting economic development through sharia-based financing that is more inclusive and sustainable.

4. Granger causality test of IHDI on PE

The Granger causality test shows that there is no causal relationship between IHDI and PE, with a probability value of 0.7029 which is greater than alpha 0.05. This applies both ways, from IHDI to PE and vice versa. This result is in line with human development theory which states that the impact of investment in human quality on economic growth takes a longer time to be realized (Todaro & Smith, 2011). Research by Imsar et al. (2023) also supports this finding, asserting that the effect of IHDI on the economy is often only seen in the long run when the quality of education, health, and labor competitiveness improves significantly.

5. Granger causality test Effect of IBA on IHDI

There is a one-way causality relationship from IBA to IHDI, with a probability value of 0.0184 which is smaller than alpha 0.05. This indicates that an increase in Islamic banking assets has a significant effect on IHDI. Islamic economic theory emphasizes that Islamic finance plays a role in supporting welfare equity and financial inclusion, which can improve people's quality of life (Chapra, 2000). The study of Alkaf et al. (2020) shows that the Islamic financial sector is able to make a positive contribution to human development by providing wider access to finance, especially for marginalized groups, thereby improving development indicators such as education and health.

CONCLUSION

This study uses a quantitative method with a Vector Error Correction Model (VECM) approach to analyze the relationship between the Islamic Human Development Index (IHDI), total Islamic banking assets (IBA), and economic growth (PE) in Indonesia during the period 2010-2023. The stationarity test results show that the data become stationary at the second difference level, while the cointegration test reveals the existence of a long-run relationship between the variables studied. In the short term, IHDI and IBA have a positive and significant effect on economic growth, but in the long term, although they remain positive, their influence is not significant on economic growth.

Granger causality analysis shows a one-way relationship from IBA to IHDI and PE, with no causal relationship between PE and IHDI. The impulse response function (IRF) results show that economic growth responds volatile to changes in IHDI and IBA, although it tends to stabilize in the long run. Forecast error variance decomposition (FEVD) reveals that economic growth is mostly influenced by itself, followed by a sizable contribution of IBA, while IHDI has a small but relevant influence in supporting human development. This research highlights the importance of the Islamic banking sector in Indonesia's economic growth and human development, with recommendations for policy strengthening to enhance the long-term impact.

To increase the effectiveness of Islamic banking in supporting economic growth and human development, it is necessary to strengthen policies that encourage scale expansion and service penetration to various levels of society. In addition, optimization of the Islamic Human Development Index (IHDI) needs to be focused through sharia-based education, health and welfare programs, so that its contribution to economic growth becomes more significant in the long run.

Future research is recommended to use more detailed data and include additional variables to deepen the analysis of the relationship between variables. In addition, closer collaboration between the Islamic banking sector and the government needs to be enhanced in order to encourage wider financial inclusion and support sustainable economic development in Indonesia.

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