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Do Good Corporate Governance and Financing Risk Management Matter for Islamic Banks' Performance in Indonesia?

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Abstract. *The purpose of this study is to examine and analyze the influence of the implementation of Good Corporate Governance principles and financing risk management on the Islamic banks' performance in Indonesia over the 2010-2019 period. 11 full-pledge Islamic Banks (BUS) was selected as the study sample using the purposive sampling technique and analyzed using the panel multiple regression techniques. The study found that Good Corporate Governance (GCG) and Financing to Deposit Ratio (FDR) positively influence the Islamic banks' performance. In contrast, Non-Performing Financing (NPF) has a negative influence on Islamic banks' performance. These findings imply that to promote the performance further, the Islamic banks should enhance the implementation of GCG principles and minimize NPF by improving financing risk management and enhance their financing by allocating their existing funds to the bankable and productive economic sectors.*

Keywords: *good corporate governance, financing risk management, non-performing financing, financing to deposit ratio, Islamic banks' performance*

JEL Classification: G21, G34

Abstrak. *Tujuan dari penelitian ini adalah untuk menguji dan menganalisis pengaruh penerapan prinsip-prinsip tata kelola perusahaan yang baik dan manajemen risiko pembiayaan terhadap kinerja bank syariah di Indonesia selama periode 2010-2019. Sebanyak 11 Bank Umum Syariah (BUS) dipilih sebagai sampel penelitian dengan menggunakan teknik purposive sampling dan dianalisis dengan teknik regresi berganda panel. Studi ini menemukan bahwa tata kelola perusahaan yang baik dan rasio pembiayaan terhadap deposit memiliki pengaruh signifikan positif terhadap kinerja bank syariah, sementara pembiayaan bermasalah ditemukan memiliki pengaruh signifikan negatif terhadap kinerja bank syariah. Temuan ini menyiratkan bahwa untuk lebih meningkatkan kinerja, bank syariah harus meningkatkan penerapan prinsip-prinsip tata kelola perusahaan yang baik dan meminimalkan pembiayaan bermasalah dengan meningkatkan manajemen risiko pembiayaan dan mengalokasikan pembiayaan mereka ke sektor ekonomi yang produktif.*

Kata Kunci: *tata kelola perusahaan yang baik, manajemen risiko pembiayaan, pembiayaan bermasalah, rasio pembiayaan terhadap deposito, kinerja bank syariah*

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Introduction

The establishment of the Islamic Development Bank (IDB) in Jeddah in December 1973 became one of the triggers for various banks with Islamic principles. IDB was inaugurated in July 1975 and began operations in October 1975. According to Yaya et al. (2016), IDB is an international financial institution founded on the declaration of the results of conferences of Ministers of Finance of Muslim countries, intending to support the progress of economic and social development of member countries and other Muslim communities based on the Islamic principles. According to Rivai & Usman (2012), another trigger of Islamic banks' presence was the gathering of the world's Islamic economists for the first time in 1976 in the International Conference on Islamic Economics and Finance in Jeddah.

Because of these triggers, in the 1970s, several Islamic banks began to emerge. In the Middle East, Dubai Islamic Bank establish in 1975, the Faisal Islamic Bank of Sudan and the Faisal Islamic Bank of Egypt launched in 1977, and the Bahrain Islamic Bank was established in 1979. In the Asia-Pacific region, the Muslim Pilgrims Savings Corporation (Tabung Haji), which aims to help Malaysians who desire to make savings to perform the Hajj, was established in 1962 (Suryani, 2012).

Subsequently, in Indonesia, Bank Muamalat Indonesia (BMI) was established in 1992 as the first Islamic bank, following other banks. When the crisis hit Indonesia in 1998, BMI was the only bank that was not shaken by the crisis, while almost all other banks and conventional financial institutions had to face bankruptcy. After experiencing Islamic banks' ability to survive during the crisis, Bank Indonesia (BI), the central bank of Indonesia, is committed to developing Islamic banking in Indonesia. One proof of BI's commitment is the National Sharia Banking Development Blueprint for the period 2002-2011.

According to Soemitra (2009), the Indonesian Islamic banking development blueprint published by BI contains the vision, mission, and objectives of developing Islamic banking and a set of strategic initiatives with clear priorities in answering the main challenges and achieving the goals over the next ten year. With the Islamic banking development blueprint's issuance, the Islamic banking market is also increasingly widespread and competitive.

The development of Islamic banking in Indonesia is also the result of the Indonesian people's demands who need an alternative banking system (Hamid et al., 2017). The intended alternative is where banks can provide healthy banking or financial services and meet Islamic principles. Seeing the magnitude of this request, then a particular constitution on Islamic Banking, namely Islamic Bank Regulation No. 21 of 2008, was present as the legalization of Islamic banking activities that strengthened Islamic banks' foundation in Indonesia (Bank Indonesia, 2002).

Consistently over time, Islamic banks in Indonesia have shown their development. As illustrated in Table 1, the total assets of Islamic banks to the banking industry's total assets have increased from 3.24% in 2010 to 4.89% in 2013. Although the values had slightly decreased to 4.83% in 2015, they showed a steady increase afterward and achieved 5.74% in 2017. After the conversions of Bank Aceh into full-fledged Islamic banking in 2016 and Bank Nusa Tenggara Barat (NTB) in 2018, the market share of Islamic banking institutions

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nationwide jumped to 5.91%. In 2019, the market share of Islamic banks in Indonesia reached 6.12% (Financial Services Authority, Indonesia, 2020).

Table 1. Islamic Banking Market Share in Indonesia, 2009-2019

Period	Islamic Banking Total Aset (IDR Billion)	Islamic Banking Market Share (%)	Public Commercial Banks' Total Assets (IDR Billion)
2010	97.5	3.24	3,008.8
2011	145.5	3.98	3,652.8
2012	195.1	4.57	4,262.6
2013	242.3	4.89	4,954.5
2014	272.3	4.85	5,615.1
2015	296.3	4.83	6,132.6
2016	356.5	5.29	6,729.8
2017	424.2	5.74	7,387.1
2018	477.3	5.91	8,068.3
2019	524.6	6.12	8,562.9

Source: The Banking Statistics and the Sharia Banking Statistics, Financial Services Authority, Indonesia (2010 – 2020).

The development of Islamic banks is also marked by an increase in the number of Islamic banks. Karim (2013) states that in 2005 the number of Islamic banks in Indonesia amounted to 20 units divided into 3 Sharia Commercial Banks and 17 Sharia Business Units. Meanwhile, the numbers of Sharia Rural Banks were 88 units. In the period of nine years from 2009 to December 2017, the number of banks increased and followed by the development of the Islamic banking office network. As illustrated in Table 2, in 2019, there were 14 Sharia Commercial Banks with 1,919 units of offices, 20 Sharia Business Units with a total of 381 offices, and 164 Sharia Rural Banks with a total of 617 offices (The Sharia Banking Statistics, the Financial Services Authority, Indonesia, 2020).

The rapid development of the banks is not isolated from their excellent performances. According to Mewengkang (2013), performance shows how a bank can produce a good achievement. Performance reflects the company's ability to allocate and manage its resources. As one of the financial institutions that offer Islamic financial services to the public, Islamic banks should be able to maintain or even improve their performance so that they can compete and survive amidst the fierce competition within the banking industry (Majid et al., 2014; and Hamid et al., 2017). Besides, with the increasing number of Islamic banks in Indonesia, customers think critically and selectively in choosing the best bank to save their funds. Especially at this time, customers have not only been using bank services to deposit funds, but they have also perceived the banks as avenues for investing funds with the hope of obtaining profits in the future (Hidayati & Utiyati, 2013). Therefore, Islamic banks with high-performance levels will be looked at and become the main target of customers to invest their funds. In this case, profit or profitability can be a measure to see the bank's achievements in its operations.

Table 2. Number of Sharia Banks and Sharia Banking Office Networks in Indonesia

Bank/Period	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sharia Commercial Bank:											
Number of Bank	6	11	11	11	11	12	12	13	13	14	14
Number of Offices	711	1,215	1,401	1,745	1,998	2,163	1,990	1,869	1,825	1,875	1,919
Sharia Business Unit:											
Number of Bank	25	23	24	24	23	22	22	21	21	21	20
Number of Offices	287	262	336	517	590	320	311	332	344	354	381
Sharia Rural Bank:											
Number of Bank	138	150	155	158	163	163	163	166	167	167	164
Number of Offices	225	286	364	401	402	439	446	453	441	495	617

Source: Sharia Banking Statistics, Financial Services Authority, Indonesia (2009 – 2020)

From the perspective of shareholders, profitability can use as a benchmark for how much profit can gain if they invest in the company. Meanwhile, for managers, profitability can be used to determine the success of the company that they lead. If a company's profitability is high, proving that the company has been efficient in carrying out its operational activities, this also shows that the company has great potential in generating profits (Handayani et al., 2016).

According to Marchyta & Astuti (2015), in measuring the performance of a company, two profitability ratios are commonly used, namely Returns on Assets (ROA) and Returns on Equity (ROE). ROA is an indicator used to measure how much company profits are based on its total Asset, while ROA illustrates how management is efficient in managing its assets to generate income (Ahmed et al., 2017). If the ROA value of a bank is large, then the bank's profit will also be extensive, and the bank's position will be better in terms of asset use. According to Veno & Syamsudin (2016), ROE is one of the profitability ratios that show the ability of a company to generate net income for the return of shareholders' equity. In other words, ROE is a financial ratio used to measure how much the level of profitability of equity. If a company has a considerable ROE value, this indicates that its performance is good.

Although Islamic banks are new players compared to conventional banks, Islamic banks have proven to adequately use and well-managed their capital and Asset for the last decade. The fact is, first, based on a report from the Financial Services Authority of Indonesia in December 2017, the banks' assets management, as measured by ROA, reached 2.55%. Second, for capital use activities, the banks produced 19.40% level of returns within the same period, as shown by the ROE ratio.

The fluctuations of the values of ROA and ROE have witnessed the changes in Islamic banks' performance, caused by the market competition between Islamic banks and conventional banks. In winning competition amidst the rapid growth of banking, Islamic banks need to enhance Good Corporate Governance (GCG). The presence of

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corporate governance for Islamic banks ensures the Shariah compliance of all Islamic banking operations. Thus, the implementation of GCG is essential for Islamic banks to better position themselves in Indonesia's parallel banking system, where both Islamic and conventional banks co-exist in the banking industry. This difference is sought by customers who want a bank with Sharia principles, making Islamic banks superior and having their markets. It also urges Islamic banks to be able to carry out financing management properly. Therefore, the application of GCG and financing risk management in Islamic banking is becoming increasingly important, as these factors play essential roles in improving the performance of Islamic banks, which is one of the main factors in attracting public interest and trust.

Due to the importance of the implementation of GCG, the Central Bank of Indonesia, Bank Indonesia issued Bank Indonesia Regulation in 2006, concerning the GCG for both conventional and Sharia commercial banks. To further enhance the implementation of GCG, in 2009, Bank Indonesia has issued Bank Indonesia Regulation, concerning the implementation of GCG for both full-fledged and Islamic window of Sharia banks in Indonesia. According to Desiana et al. (2016), the implementation of GCG is a vital aspect for the Islamic banks to improve the company's performance by monitoring its management's performance and ensuring management accountability to shareholders. The proxy used to measure GCG is the composite value of GCG self-assessment. GCG self-assessment is an assessment of the implementation of GCG principles conducted by the bank following the eleven factors that have been determined by the Bank of Indonesia.

Apart from the implementation of GCG to improve performance, Islamic banks should also pay their attention to financing risk management aspects. In the external and internal conditions of Islamic banks that are experiencing relatively rapid development and accompanied by the increasing risk of banking business activities, Islamic banks are in dire need to implement prudent risk management. A risk is an event where a measure of uncertainty arises that can cause losses. As a financial institution, banks can face a variety of risks, including market risk (changes in net asset value due to changes in economic factors), credit/financing risk (changes in net asset value due to changes in the ability of third parties to fulfill their obligations), operational risk (costs arising from errors in making transactions), and performance risks (failure to monitor employees or failure in using measurement methods) (Prabowo, 2009). Because it has various potential risks, as Prabowo (2009) mentioned, risk management in the banking industry has become an essential part of the operationalization of risks faced by banks. In minimizing risk, the risk management process includes risk identification, risk measurement, risk management, risk limitation, and risk monitoring.

One risk that becomes a concentration of Islamic banks is the risk of financing. The risk of financing is a risk that causes losses to occur due to the possibility that the counterparty will fail to fulfill its obligations, or it can be said that it will not pay back the financing. One indicator that can be used to measure the risk of financing in Islamic banks is Non-Performing Financing (NPF) (Ekaputri, 2014). NPF is related to the risk of financing provided by banks, and it shows the ability of bank management to manage non-performing financing provided by banks to customers (Maesun & Purwaji, 2016). Therefore, GCG and financing risk management are essential in managing banking institutions that have been created and designed to improve bank performance, protect the interests of stakeholders, and improve their compliance with laws and ethical values that generally applicable.

Previous studies have investigated the effects of GCG (Sumarsono, 2014; Kartika, 2014; and Fauzi, 2016) and financial risk management (Ekaputri, 2014; Siswanti, 2016; and Budiman, 2016) on companies' performance in Indonesia. For example, Sumarsono (2014) examined the effect of GCG implementation on the profitability of publicly listed companies listed on the Indonesian Stock Exchange. Kartika (2014) and Fauzi (2016) examined the effect of GCG implementation on full-fledged Sharia banking in Indonesia. They measure the implementation of GCG through indicators of the Sharia supervisory board, the board of commissioners, the board of directors, and the audit committee on Islamic banks' performance, measured by ROA. Similarly, Desiana et al. (2016) investigated the effect of GCG on profitability, measured by ROE, on Sharia banks in Indonesia for 2010-2015. Overall, these studies found the important role of GCG on the firms' performance, and only a few of the found the insignificant effect of GCG on banking performance (Fauzi, 2016).

On the other hand, Ekaputri (2014), Siswanti (2016), and Budiman (2016) examined the effects of financing risk management represented by the NPF on Islamic banks Indonesia. These studies found mixed findings; some recorded the significant negative effect of NPF on banking performance (Ekaputri, 2014; and Budiman, 2016), and few studies documented the significant positive effect of the NPF on the performance of Sharia banking institution (Siswanti, 2016). These reviewed studies documented mixed findings of GCG and financial risk management's effects on firms' performance. These shreds of evidence could be partially due to their studies investigating the effects of GCG and management risk separately on the banking performance, different variables' measurement, the various period of the study, and different use of data analysis techniques. Thus, to provide more robust and latest findings, this study purposely explores the effect of both GCG and financial risk management on the Sharia banking institution using panel data regression analysis over the period 2010-2019.

This study's findings are hoped to sheds some light on Sharia banking management to design proper strategies to implement GCG and financial management risk improving the banking performance. This study's findings are also crucial for the relevant governmental authorities, such as the Financial Services Authority and Bank Indonesia, to promote the Sharia banking industry's existence by enhancing their performance through the implementation of GCG and management risk. Sharia banks' customers also hoped to gain some vital information to predict the banks' performance based on GCG and management risk policies implemented by the banks.

The rest of the study is structured in the following manner. Section 2 provides the research method on which the data analyses are based. Section 3 presents the findings and their discussion, followed by the concluding remarks in the final section, Section 4.

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Methods

This study empirically explores the relationship between the implementation of Good Corporate Governance (GCG) and financing risk management on the performance of 11 full-fledged Islamic commercial banks in Indonesia over the period from 2010 to 2018. Of 13 existing Islamic banks during the study period, 11 were selected using the purposive sampling technique. The selected banks are based on the following criteria: full-fledged Islamic banks that regularly publish annual reports and GCG implementation reports.

Since the study investigates 13 cross-sectional banks over nine years of time series period, the panel regression method is used to answer the study's objective. Commonly, the panel regression analysis comprises three models, namely: Common Effect Model (CEM)/ Pooled Ordinary Least Square (POLS), Fixed Effect Model (FEM)/Least Squares Dummy Variable (LSDV) technique, and Random Effect Model (REM)/Error Components Model (ECM).

Sunarwan (2015) defines the Pooled Ordinary Least Square (POLS) model as the simplest estimation method of the panel data regression model with an intercept assumption and constant slope coefficient between time and cross-section (common effect). This model is also called the Common Effect Model (CEM), does not pay attention to individual dimensions or time. It is assumed that the data behavior between companies is the same in various periods. The form of the model is:

$$PRF_{it} = \beta_1 + \beta_2 GCGX_{2it} + \beta_3 NPF_{3it} + \beta_4 FDR_{4it} + \varepsilon_{it} \tag{1}$$

Meanwhile, the Fixed Effects Model (FEM) assumes that individuals' differences can accommodate the difference in intercepts. To estimate the fixed effects panel data using a dummy variable technique to capture the intercept differences between variables. This estimation model is often called the Least Squares Dummy Variable (LSDV) technique (Sally, 2015). Gujarati (2009) defines the meaning of the term fixed effects, although the intercept may differ between individuals, the intercept of each individual does not vary from time to time that is invariant time. Using dummy variables can allow intercepts to vary between individuals, specifically, differential intercept dummies. Therefore, the equation is as follows:

$$PRF_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i} + \beta_2 GCG_{2it} + \beta_3 NPF_{3it} + \beta_4 FDR_{4it} + \varepsilon_{it} \tag{2}$$

Although the FEM or LSDV is easy to implement, Gujarati (2009) states that the LSDV model's reason is that dummy variables can represent a lack of knowledge about the model. However, LSDV can result in the loss of a significant number of degrees of freedom. Therefore, the Error Components Model (ECM) or the Random Effects Model (REM) can overcome this problem. The Generalized Least Squares (GLS) method can estimate disturbance variables that correlate between individuals and years (Majid & Maulana, 2012; Arfan et al., 2017; Majid et al., 2020). If we do not take into account this correlation structure, the resulting estimator will be inefficient. The REM equation can write as follows:

$$PRF_{it} = \beta_{1i} + \beta_2 GCG_{2it} + \beta_3 NPF_{3it} + \beta_4 FDR_{4it} + \mu_{it} \quad (3)$$

Where *PRF* is the performance of the Islamic banks; *GCG* is the good corporate governance; *NPF* is the non-performing financing; *FDR* is the financing deposit ratio; β_1 and α_1 are the constant terms, β_2, β_3, and β_4 are the estimated of independent variables, D is the dummy variable, α_2, α_3, and α_4 are the estimated of dummy variables, ε and μ are the error terms, i and t are the Islamic bank i and period t.

The data used in this study are financial ratios of profitability measured by Returns on Assets (ROA), Good Corporate Government (GCG) measured by 11 indicators proposed by Bank of Indonesia, and financial risk management measured by the Non-Performing Financing (NPF) and Financing Deposit Ratio (FDR). Secondary data from 2010-2018 gathered from the Islamic banks' financial reports and Sharia Statistics, Financial Services Authority of Indonesia.

The year 2010 is taken as a starting data period for data analysis, since starting from the year 2010 onwards, all full-fledged Islamic banks and Islamic windows have been mandatory to implement the GCG principles. The selected data period is in line with the Circular of Bank Indonesia No. 12/13/DPbS and Bank Indonesia Regulation No.11/33/PBI/2009 that obliged all Sharia commercial banks and sharia business units to implement GCG principles in their operations.

Result and Discussion

This study adopted the panel data analysis method. The panel data has three models, namely Common Effect Model (CEM)/Pooled Ordinary Least Square (POLS), Fixed Effect Model (FEM)/Least Squares Dummy Variable (LSDV) technique, and Random Effect Model (REM)/Error Components Model (ECM). In selecting the most appropriate panel regression model for data analysis, the study conducts the Chow test, the Hausman test, and the Lagrange Multiplier test.

The Chow test was conducted to determine whether the most appropriate panel data model between the CEM/POLS method or by the FEM method (Sobita et al., 2014). If the test results show that the most appropriate model to be used is the CEM/POLS, the Hausman test is no longer needed to perform. However, if the Chow test results show otherwise, the FEM model is the most suitable model to be used; thus, the Hausman test needs to be further conducted. The Chow Test results in this study can show in Table 3.

Referring to the Chow test results from Table 3, the study failed to reject H_0 (CEM/PLS), as shown by the insignificant value of cross-section F (0.285 > 0.10). This finding means that the CEM/POLS is the most appropriate model to be adopted compared to the FEM. Since the study rejected the FEM, the Lagrange Multiplier test needs to be further tested to determine which panel regression model should be selected as the best model between CEM/POLS and REM/ECM (Umar, 2014). Table 3 illustrated that the probability value of Breusch Pagan is found to be insignificant (0.1793 > 0.10), showing a non-rejection of H_0 (CEM/POLS), while the rejection of H_1 (REM/ECM). These findings show that both based on the Chow test and Lagrange Multiplier test, the CEM/POLS is found to be the most

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appropriate model to be adopted in the study. Having identified the CEM/POLS model is the most suitable panel regression model to be estimated in our study, in the next step, the study estimates the model where their findings show in Table 4.

Table 3. Tests of Panel Model Selection

Chow Test: Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.238	(10,63)	0.285
Cross-section Chi-square	13.817	10	0.181
Lagrange Multiplier Test	Cross-section	Time	Both
Breusch-Pagan	0.044	1.759	1.803
Prob.	0.832	0.184	0.179

The t-test is used to see the significance of the influence of independent variables individually on the dependent variable, assuming other independent variables are constant. Positive (+) and negative (-) signs indicate the direction of the relationship, whether the change in the dependent variable is in the same direction (positive) with the change in the independent variable or the opposite direction (negative). If rejecting H_0 and accepting H_1 means that the independent variables statistically significantly influence the dependent variable. However, if receiving H_0 and rejecting H_1 means that the independent variables statistically do not significantly affect the dependent variable.

Table 4. Findings of the Panel Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GCG	1.442^{*}	0.759	1.900	0.061
NPF	-0.404^{***}	0.031	-12.822	0.000
FDR	0.014^{***}	0.004	3.123	0.002
R^2 = 0.702; Adjusted R^2 = 0.694; F-statistics = 43.087^{***}; Prob. F-stats = 0.000; Durbin-Watson = 2.233.				

Note: *** and * indicate significant at the 1% and 10% levels, respectively.

As illustrated in Table 4, the study found a significant positive effect of GCG on bank performance, measured by ROA at the 10% level of significance with the estimated value of 1.442. Specifically, this shows that a 100% increase in the implementation of GCG principles has increased banking performance by 14.42%. This finding shows that the first hypothesis, H_1, is not rejected, implying that the GCG variable has a significant partial effect on Islamic banks' performance in Indonesia. This finding provided evidence of the importance of GCG implementation for the promotion of Islamic banking performance.

GCG is one crucial part of the process and structure used by the Islamic banking organs such as shareholders, capital owners, commissioners, Shariah supervisory boards, and directors to improve business success and accountability. Its GCG's principles could also be used as a guide to maximize shareholder value in the long term while taking into account the interests of other stakeholders, based on decision-making regulations and ethical values. The results of our study show the significance of GCG in affecting banking performance. This finding further implies that to enhance Islamic banking performance in the future, the banks should pay more attention to improve the application of GCG principles based on Islamic values.

The result of this study is in line with previous research conducted by Fauzi (2016), Desiana et al. (2016), and Tumewu & Alexander (2014), which state that GCG has a positive impact on the performance of Islamic banks. Kusuma & Ayumardani (2016) also found that corporate governance efficiency improved Islamic banks' performance in Indonesia over the 2010-2014 period. Kusuma & Rosadi (2019) and Irawati et al. (2019) also provided pieces of evidence on the importance of good governance in improving Islamic banking performances in Indonesia. However, this research contradicts the results of previous research conducted by Syam & Najda (2012), which states that the implementation of GCG does not significantly influence Islamic banks' profitability.

Table 4 also provides findings of the second hypothesis test, H_2 - Non-Performing Financing (NPF) affects Islamic banking performance. The study found a significant negative effect of NPF on banking performance at the 1% significance level with the estimated value of -0.404. This finding shows a non-rejection of the second hypothesis, H_2. This finding shows that an increase in NPF by 100% has caused a 40.4% decline in banking performance. An increase in NPF has affected the bank's performance inversely because the higher the NPF, the worse the quality of bank financing that has the potential of problematic financing to be greater, affecting the fall in the value of ROA.

NPF measures the amount of financing that is problematic and may not be invoiced. The result of our study indicated a significant negative effect of NPF on banking performance. The greater the value of the NPF, the worse would be the Islamic bank's performance due to the presence of problematic financing reflected in the NPF. In turn, this could result in the banks' loss of opportunity to obtain income from the financing provided, thus worsening their profitability. This finding implies that, in the future, Islamic banks should pay more attention and be careful when providing financing not to increase NPF and, consequently, deteriorate the performance of Islamic banks.

The results of this study support the findings of previous studies conducted by Ferdyant & Takidah (2014), Yuliany (2014), and Sulistianingrum (2013). They recorded a negative impact of NPF on performance, as measured by ROA. Fakhrunnas & Imron (2019) documented a negative influence of NPF on 21 rural Islamic banks' performance across 21 in Indonesia during the 2013-2017 periods. Similarly, Sanusi & Zulaikha (2019) found evidence that NPF negatively affected Islamic rural banks' profitability in Indonesia. Finally, Zaman & Chowdhury (2019) also found a negative correlation between NPF and Islamic banking performance in Bangladesh.

The finding of the third hypothesis, H_3 - the financing to deposit ratio, affects the banking performance, and is also reported in Table 4. The Financing to Deposit Ratio (FDR) has a positive effect on banking performance at the 1% level of significance value

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with the estimated value of 0.014, confirming the non-rejection of the third hypothesis, H_3. Specifically, this finding shows an increase of 100% in the FDR; it has caused an increase of 1.4% in banking performance. This finding also indicates the importance of managing financing to the ratio of the deposit to promoting Islamic banking performance.

Since the FDR measures the banks' financing as a source of liquidity, which is by dividing the amount of financing provided by banks against the third party funds, the higher the FDR implies the higher ability of Islamic banks to channel their funds to finance the third party. FDR has a positive impact on the banking performance caused by the banks' higher ability to utilize their funds channeled to the third party optimally. With the distribution of large third party funds, the banks earned higher returns on their assets as a measure of banking performance. This further implies that Islamic banking institutions should continue to pay attention to financing management so that Islamic banks' performance will be steadily improving in the future.

This finding is in harmony with previous research conducted by Sulistianingrum (2013), which states that FDR has a positive and significant effect on performance measured by ROA. Apip et al. (2019) shared a similar finding of FDR's significant positive effect on Islamic banking performance in Indonesia. In the long run, the FDR is found to positively affect the performance of 11 Islamic banks in Indonesia over the period from2014 to 2018 (Aspirantia et al., 2019). However, this research contradicts the research results conducted by Suryani (2012), which states that FDR does not affect performance.

Finally, our estimated model is free from model misspecification, as indicated by the F-statistics's significance at the 1% level of significance. This finding shows the model's power to predict banking performance, considering GCG, NPF, and FDR as their determinants. As shown by the determination of adjusted R^2, the estimated coefficient of 0.694 shows that 69.4% variations in the Islamic banking performance predict by the changes in GCG, NPF, and FDR variables. On the other hand, only 30.6% of Islamic banking performance variations explain by other variables such as capital adequacy, assets management, dividend policy, and other factors that not include in the model.

Conclusion

This study empirically measured and analyzed the influence of the implementation of Good Corporate Governance (GCG) and financing risk Management on Islamic banking performance in Indonesia over the 2010 to 2018 period. Based on the panel regression of Common Effect Model/Pooled Least Square, the study found the positive effects of GCG on Financing to Deposits Ratio (FDR) on the Islamic banking performance. Meanwhile, Non-Performing Financing (NPF) has a negative impact on Islamic banks' performance. These findings imply that to promote Islamic banking performance further, the managers should enhance the implementation of the GCG principles and financing risk management by channeling financing to credible and bankable productive economic sectors.

Future studies on this topic could provide reliable and comprehensive empirical by incorporating Islamic banking performance determinants into the model of analysis. These determinants could include both internal and external determinants contributing to Islamic banking performances. Finally, incorporating more Islamic banks across the globe into the study and analyzing them will comparatively enrich empirical findings.

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Indonesian Islamic Banking Performance: A Conceptual Framework

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Abstract. *This conceptual paper aims to develop an integrated organizational performance model. The analysis will focus on the role of organizational management variables using Indonesian Islamic banking as a case study and features a correlation between how they manage their performance. The model developed in this paper uses a conceptualization phase adapted from Dubin's theory-building method. The conceptualization phase formed through interviews, observations, written expert experiences, and research publications. The finding proposes a conceptual framework that has the potential to boost organization performance by pay attention to how to bring together service innovation, knowledge management capability, and human capital drivers in such a model. The findings provide valuable insights for organizations into non-financial variables' role and the importance of organizational management variables in improving organizational performance, which could help them in (re-) align their management practices and formulating strategies for Indonesian Islamic banking.*

Keywords: *organizational performance, Islamic banking, model development*

JEL Classification: L2, L8

Abstrak. *Paper konseptual ini bertujuan untuk mengembangkan model kinerja organisasi yang terintegrasi. Analisis akan fokus pada peran variabel organisasi manajemen. Paper ini menggunakan Perbankan Syariah Indonesia sebagai studi kasus dan menampilkan korelasi cara mereka mengelola kinerja mereka. Pengembangan model dalam paper ini menggunakan "konseptual fase" yang diadaptasi dari metode pengembangan teori dari Dubin. Tahap konseptualisasi dibentuk melalui kombinasi wawancara mendalam, observasi, pengalaman tertulis para ahli, dan publikasi penelitian. Kerangka kerja konseptual yang berpotensi meningkatkan kinerja; sebuah organisasi dengan demikian harus memperhatikan bagaimana menyatukan inovasi layanan, kemampuan manajemen pengetahuan, dan pendorong sumber daya manusia dalam model seperti itu dan inilah yang diusulkan di sini. Temuan ini memberikan wawasan berharga tentang peran non-keuangan dan pentingnya variabel organisasi manajemen dalam meningkatkan kinerja organisasi, yang dapat membantu mereka dalam (menyelaraskan) praktik organisasi manajemen mereka.*

Kata Kunci: *kinerja organisasi, perbankan syariah, pengembangan model*

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Introduction

Organizations are categorized as successful if they can achieve their goals and objectives (Venkatraman & Ramanujam, 1986) by efficiently and effectively capitalizing on their resources (Daft, 2015). The process of successfully performing a function term as performance. Improving performance is crucial for any organization for some reason. Only through performances are organizations able to grow and progress (Corina et al., 2011); performance can steer organizations toward their strategic and operational goals (Popova & Sharpanskykh, 2010), and performance helps organizations successfully achieving their vision and mission (Akeem & Edwin, 2016). Therefore, recognizing the determinants of organizational performance is essential, specifically in the disruptive era's current context.

Previous research has uncovered variables that influence organizational performance, including leadership competency (Almatrooshi et al., 2016), employee performance (Mastrangelo et al., 2014), innovation, inter-organizational systems, and quality (Mafini, 2015), operational efficiencies, mergers, acquisitions, levels of diversification, organizational structures, top management, team composition, and style (Mankins & Steele, 2005), human capital efficiency (Azlina et al., 2017), and organizational culture (Hogan & Coote, 2014). Although those studies conducted in various industrial contexts, it can be concluded that organizational performance is a multi-dimensional model that is influenced by a wide variety of internal and external variables. The question is whether these models can apply to all industrial contexts.

This paper uses the Indonesian Islamic Banking (IIB) industry as the context because it is interesting to analyze the three challenges IIB faces. The first challenge is that IIB applies the values of religion in banking, so they are still looking for an identity. However, if in 27 years it has not been established enough, it may be necessary to look for a lack of organizational performa n ce. Second, in its search for identity, IIB was confronted with conventional banks that were already established and controlled the market. This condition is certainly a challenge because the market is already familiar with IIB's competitors' products, services, and conventional banking systems. Third, today's banking world faces the challenges of the disruptive era; the financial industry is the third industry to be disrupted by advances in financial technology and market changes. This condition is undoubtedly a challenge for both IIB and conventional banks to adapt to moving forward.

This paper aims to create a model based on internal dimensions that will allow the evalua t ion of IIB performance as a case study. There are in short supply of studies on organizational performance models' internal management variables, especially in the banking industry. The research questions that arise are: First, what are the main variables that play a significant role in effectively boosting IIB performance? Second, what integrated organizational perfor mance model provides a framework to support and guide the development of IIB's performance? It expects that this paper can uncover insights into organizational performance in organizations that have specific values, late-mover organizations that enter the established market, and organizations that have faced disruption, such as IIB.

This paper is novel because it creates an integrated organizational performance model that can boost organizational performance in Indonesian Islamic banking. This model's

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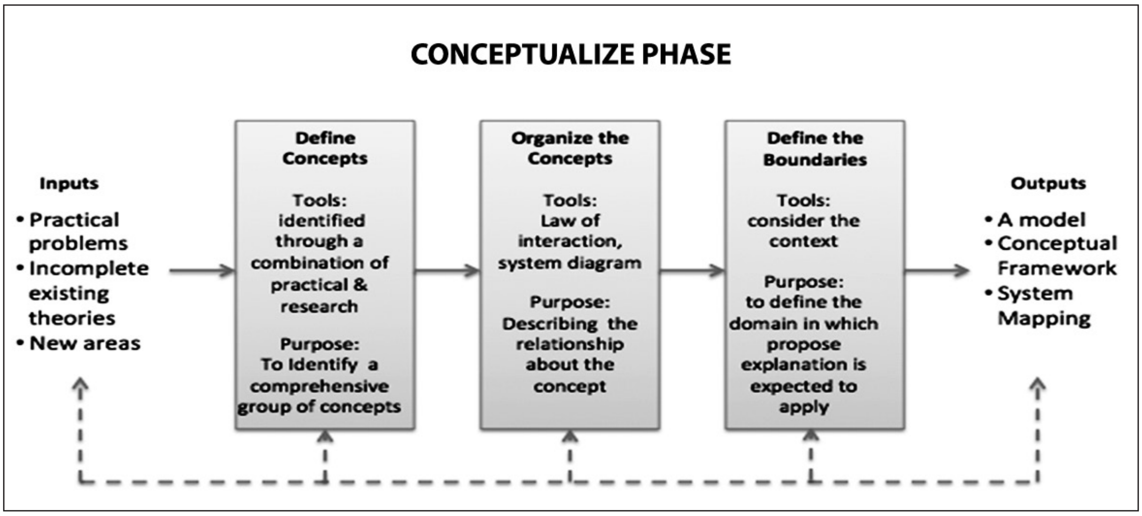
main advantage is providing valuable insights for organizations into the role of non-financial variables and the importance of organizational management variables in improving organizational performance. The results also captured the main variables that play a significant role in effectively boosting IIB performance using a conceptualization phase adapted from Dubin's theory-building method. The findings could help practitioners and academics re-align management practices, formulating strategies for IIB, and providing future research needs.

This conceptual paper organizes as follows; section 1 introduces the theoretical and practical problems. The first part describes the need to develop an organizational performance model, and the second describes the particular problems in IIB's performance. Section 2 explains the methods and tools used to develop the model. Section 3 discusses applying the modeling methodology to Indonesia and describes how it creates for this particular case using Dubin's process. Section 4 presents the output of the analysis process: an integrated IIB performance model. Section 5 wraps up the entire discussion in this paper, identifies the practical implications, and makes recommendations for further research.

Methods

The output expected from this qualitative paper is an integrated conceptual model; consequently, conceptual development needs. The conceptual development output is a clear conceptual framework, including a model or metaphor integrated from previous research knowledge and practitioners' experience with similar issues or problems (Lynham in Swanson & Chermack, 2013). A model is a visual illustration of the proposed explanation or a set of linked concepts that explains a domain of human activity. Model developments in this paper will use the conceptualization phase adapted from Dubin's theory-building method. Dubin called the results of conceptual development a "theoretical model," as depicted in Figure 1.

Figure 1. Conceptualize Phase



Sources: adapted with adjustment from Durbin (1978) in Swanson & Chermack (2013)

The model development process in this paper is as follows. First, inputs that contain incomplete existing theories, state-of-the-art and practical problems, or research gaps are introduced in Section 1 and are discussed more deeply in Section 3. This research's input is the need to develop an integrated IIB model as a theoretical framework and a practical guide to improve IIB performance. This condition indicates the need for conceptual development.

The next step is to define the concepts involved in the theory-building effort. In this step, we conduct in-depth interviews with Islamic banking managers from three banks, collect observational data, and analyze secondary data about the variables that influence IIB's performance. We propose three variables that influence IIB performance, which defines in Section 3. The third step is to organize the concepts by identifying and describing the relationships between them. In this step, we conduct a literature review to describe the relationships between the variables. This step explains in Section 3.

The fourth step is defining the boundaries that locate the theory in the social world and bind it to a particular context. In this phase, the researchers conducted interviews with IIB stakeholders to bring the Islamic banking conceptual model into the Indonesian context. The internal IIB stakeholders include two directors, three managers, and three employees, and the external stakeholders include six customers, two competitors, and three persons from society. This process completes by identifying outputs that postulate an integrated IIB performance model as the final result. These two steps are explained in Section 3.

Result and Discussion

The Application of the Modeling Methodology to Indonesian Islamic Banking

Inputs of the Conceptualization Phase

Our introduction to the practical problem first describes Islamic banking more generally and then Islamic banking in Indonesia. The first context is Islamic banking, in which there are some fundamental differences in philosophy, system, rules, and regulations from conventional banking. Islamic banking consists of practices based on Islamic laws (sharia). Interest entirely prohibit in Islamic banking. It is asset-based financing in which the trade of elements prohibited by Islam is not allowed. Meanwhile, conventional banking is profit-oriented, and its purpose is to make money through interest.

The second point relates to Islamic banking in Indonesia. Islamic (i.e., sharia) banking in Indonesia began in 1992 with the establishment of Bank of Muamalat Indonesia (BMI) and was welcomed enthusiastically by Islamic communities. In Indonesia, where most people are Muslim, Islamic banking is auspicious because of its vast potential market. In 2017, the population of Indonesia was 229.000.000 people (Central Bureau of Statistics, 2019). About 87.2% are Muslim, constituting 12.6% of the global Muslim population (Lipka & Hackett, 2017). Thus, Indonesia has the largest Muslim population in the world.

Twenty-seven years after its establishment, IIB has shown fast growth in units, branches, employees, and total assets, as seen in Table 1. IIB has increased from one to

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14 units, while IIB increased from eight to 22. The number of IIB offices has increased almost ten-fold (from 299 units to 2301 units) and had spread to all 34 provinces in Indonesia, with one branch located abroad. The number of employees has reached 54,840. Total assets had increased from 5.8 billion Rupiah in 2003 to 524.56 billion Rupiah in December 2019.

Table 1. Indonesian Islamic banking development from 2012 to 2019

Banking Indicators	2012	2013	2014	2015	2016	2017	2018	2019
Islamic banks (unit)	11	11	12	12	13	13	14	14
Islamic banking unit (unit)	24	23	22	22	21	21	20	20
Total number of offices (unit)	2271	2588	2483	2301	2.201	2.169	2.229	2.301
Number of employee (person)	27.219	38.228	45.818	55.816	55.597	55.746	54.471	54.840
Total asset (Billion IDR)	195.0	242.3	272.3	296.3	356.5	424.18	477.32	524.56
Market-share (%)	4.60	4.80	4.86	4.61	5.29	5.74	6.03	6.12

However, this data shows that IIB shares are under their targets. Islamic banking's market share (based on total assets) in 2019 was 6.12% of the total share. The Grand Strategy of Islamic Banking Market Development from OJK targeted a 5% market share in the first five years, a 10% market share in the first ten years, and a 15% market share in the first 15 years. The market share of Islamic banking in Indonesia did not exceed 5% for more than 20 years (1992–2015), known as the 'five percent trap phenomenon'; although, it finally surpassed 5% in 2016 (Otoritas Jasa Keuangan, 2018).

Table 2. Market Potential vs Market Share Of Top ten Global Islamic banking

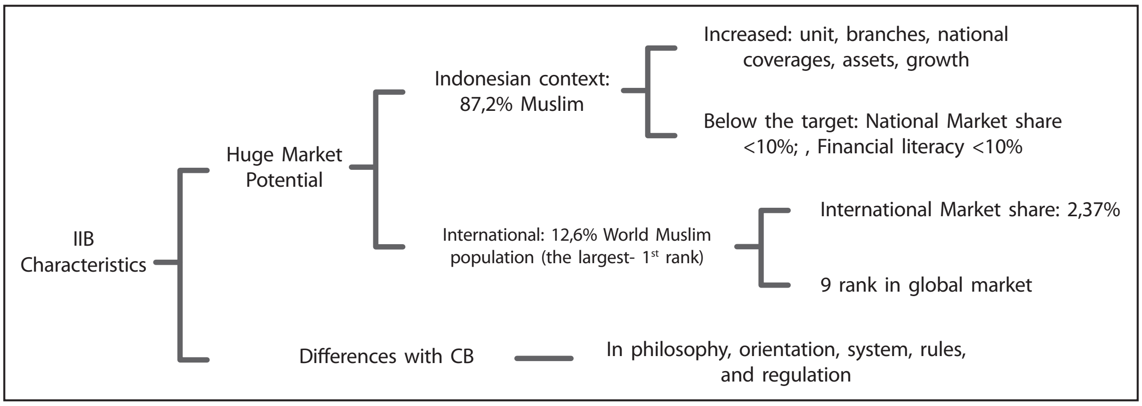
Ranks	Market Potential				Market Share		
	Country	Muslim Population	Country Percentage	Global Percentage	Country	Share of Assets	Percentage
1	Indonesia	229,000,000	87.2%	12.60%	Malaysia	$205.20	22.70%
2	Bangladesh	153,700,000	90.4%	8.95%	Saudi Arab	$168.80	18.67%
3	Iran	82,500,000	99.4%	6.50%	UEA	$154.90	17.14%
4	Saudi Arabia	33,535,000	98.2%	2.22%	Qatar	$95.70	10.59%
5	Malaysia	16,318,355	61.3%	1.49%	Kuwait	$87.20	9.65%
6	UEA	7,251,627	76%	0.28%	Bahrain	$52.40	5.80%
7	Kuwait	2,175,684	74.6%	0.23%	Iran	$35.90	3.97%
8	Qatar	1,566,786	77,5%	0.10%	Bangladesh	$28.90	3.20%
9	Bahrain	1,063,239	73.7%	0.08%	Indonesia	$21.40	2.37%
10	Others	1,150,286,847	-	70.74%	Others	$53.50	5.92%
	Total	**1,626,124,735**	**-**	**100%**		**$903.90**	**100%**

Source: Lipka & Hackett (2017) and Weng (2019)

Globally, nine countries contribute 94.08% of the total share of Islamic, as seen in table 2. The right column presents market share ranking based on total assets (Weng, 2019), and the left column is the ranking of market potential based on the respective Muslim population (Lipka & Hackett, 2017). Indonesia, with the largest Muslim population in the world, is ranked first in market potential. However, if we see the assets or market share, IIB only contributes 2.37%, meaning IIB ranks ninth in market share.

From the description above, it is clear that there is a problem in IIB performance, as summarized in Figure 2. There is a gap between IIB potential and performance. Organizations at its maturity level should have already achieved their objectives and have healthy performance. However, in reality, there are still many challenges to overcome. The ability to recognize the most influential variables and to properly manage challenges has indeed become the key to improving organizational performance. That is why this paper proposes an integrated model that can improve IIB performance. Many studies discuss macro- and micro-factors that influence organizational performance. This paper will focus on micro-factors.

Figure 2. Indonesian Islamic Banking Characteristics



Sources: abstracted from many resources

Incomplete Existing Theory

For the last three decades, organizational performance has become central to the organization, business, and management research because it is considered a means of detecting organizational health and success. Along with increasing research on organizational performance, many research studies have emerged which propose organizational performance models, including the organizational lag model (Damanpour & Evan, 1984), the innovation-driven organizational performance model (Baker & Sinkula, 1999), organizational culture and performance model (Marcoulides & Heck, 1993), the modeling organizational performance indicators (Popova & Sharpanskykh, 2010), determinants of organizational performance (Corina et al., 2011), an evolutionary model of organizational performance (Barnett et al., 1994), and the Schein model test (Hogan & Coote, 2014). The models are partly conceptual; some have tested, but none examines the context of organizations that are late-movers and that disruptive face era. This paper will fill this research gap.

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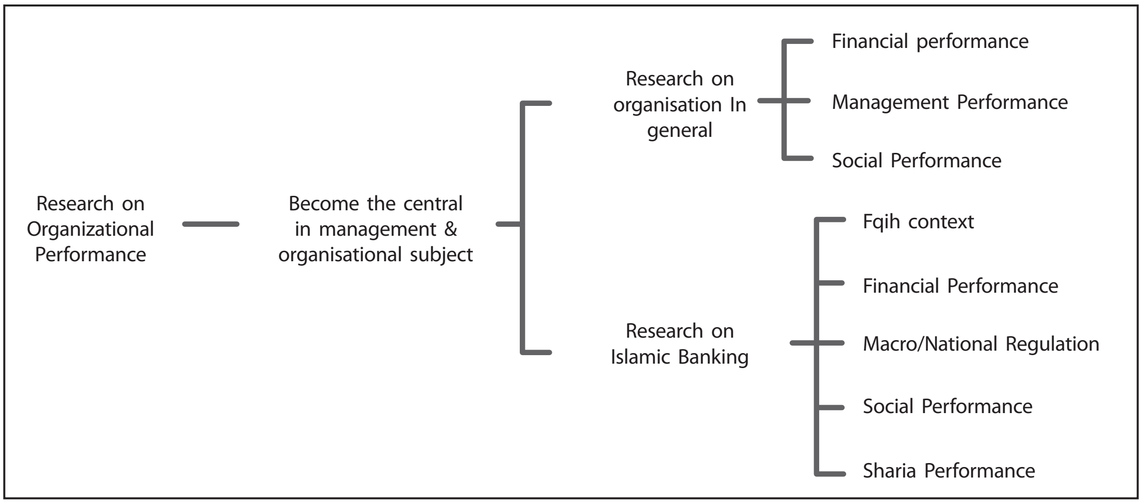
The increasing research on the organizational performance model has led to the formulation of theories about variables within organizations that can make a difference in performance. Previous research found effects of variables in increasing organisational performance, such as innovation (Damanpour & Evan, 1984; Baker & Sinkula, 1999; Corina et al., 2011; Hogan & Coote, 2014); organizational culture (Hogan & Coote, 2014); human capital (Gelade & Ivery, 2003); and knowledge management (Darroch, 2005).

Macroeconomic factors and financial variables influence most studies on IB performance; only a few have examined the effect of management variables on Islamic banking performance. The following management variables that affect Islamic banks' performance have examined in the literature: human resource management practices (Masum et al., 2016); sharia supervision and corporate governance (Mollah & Zaman, 2015), intellectual capital (Nawaz & Haniffa, 2017); corporate social responsibility (Faliza, 2016).

There is a shifting research focus on Islamic banking performance initially following conventional bank performance by focusing on financial performance aspects (Rafiq, 2016; Rodoni et al., 2017; Rosly & Abu Bakar, 2003;) and Islamic banking efficiency (Al Arif et al., 2020; Shahid et al., 2010; Yudistira, 2004). The research then developed into linking organizational performance with sharia, starting from the promotion of sharia compliance and Islamic ethics (Hameed et al., 2004; Nawaz & Haniffa, 2017). Some scholars then made measurements by the objectives of establishing a sharia bank using the maqashid sharia framework. The maqashid sharia theory is twofold, comprising Al-Ghazali's theory as a pioneering classical and integrative interpretation (Ascarya et al., 2017; Asutay & Harningtyas, 2015; Bedoui & Mansour, 2015) and Abu Zuhairah's theory as a contemporary interpretation that more often implemented in the organizational context (Mohammed et al., 2008; Rusydiana & Parisi, 2016; Antonio et al., 2012).

The framework using Abu Zuhairah's maqashid theory has become widely used. Several studies have measured the performance of Indonesian Islamic banks using this measurement tool (Ascarya et al., 2017; Hosen et al., 2019; Mifrahi & Fakhrunnas, 2018; Nugraha et al., 2020; Permana et al., 2017; Rusydiana & Sanrego, 2018; Soleh, 2016; Antonio et al., 2012). There are three dimensions of this measurement: educating people, establishing justice between stakeholders, and promoting welfare. The results show that IIB has not yet paid attention to human capital (index point: 0.18 of 30%). This condition will affect the quality of internal human capital, organizational knowledge. It will not provide a good atmosphere for innovation and influence customers' Islamic banking literacy in the long run. The second dimension is establishing justice (index point: 6.75% of 41%). This dimension means the products developed in Islamic Banking do not yet reflect sharia. Its flagship product still imitates conventional banks.

Figure 3. Incomplete Existing Theory of Islamic Banks Performance



Sources: abstracted from many resources

From the description above, research mapping on organizational performance summarize in Figure 3. There is research scarce on Islamic Banking performance in the context management. Based on the presentation of the practical problems and incomplete existing theory summarized in Figures 2 and 3 in the section input conceptualization phase above, this paper found the need to develop an integrated IIB model as a theoretical framework and practical guide improving IIB performance. This condition indicates the need for conceptual development that starts with defining the concept.

Define the concepts

The concept defined here is a variable that affects organizational performance. Based on the study of sharia banking practitioners (Kuwait Finance House KSCP and Subsidiaries, 2013). Indonesia still occupies the third cluster in Islamic banking with regard to innovative products and services. The fourth cluster, which is the highest cluster, includes Malaysia, United Arab Emirates, and Bahrain. The fourth cluster is the most innovative and varied in product development. Indonesia, Brunei, North Africa, Turkey, and Qatar are in the third cluster. Thus, they still fall short when compared to the fourth cluster. The facts show that the innovation in sharia banking products in Indonesia is still lacking.

It cannot be denied that there is a strong correlation between product, service innovation, and market attention in Islamic banking. It can be said that the more innovative Islamic banking's products and services are, the faster the market will grow. From these phenomena, this paper proposes that the first variable that influences organizational performance is service innovation. Service innovation refers to a new service experience or service solution that involves at least one of the following four dimensions: a new service concept, a new customer interaction, a new value system, and a new delivery system and technology (den Hertog et al., 2010).

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The second variable that is predicted to influence organizational performance is human capital. Qualified human capital is scarce in Islamic banking. Human capital in this context describes people who are committed, qualified, and competent in the sharia system so they can participate and contribute to the development of Islamic banking (Faliza, 2016). There is ample qualified human capital in banking, but they typically prefer conventional banking because they have better remuneration and brand images. Roughly 85% of the 300,000 human resources working in the Islamic banking industry currently lack sufficient knowledge of sharia (Antonio et al., 2012). Previous research has studied human capital management drivers and organizational performance (Bassi & Mcmurrer, 2006; Jamal & Saif, 2011); human capital drivers in Islamic banking (Muafi et al., 2017), and human capital as a driver for innovation (Mariz-Perez et al., 2012).

The next variable is knowledge management (KM). KM is the capability to create action from knowledge. It can be initiated from multiple sources and experiences (Ho, 2008). Different from conventional banking, the name 'Islamic' has profound consequences on an organization's vision, mission, culture, and practices that require specific knowledge; therefore, it can be assumed that KM plays a critical role in that industry. Based on previous research, KM can support innovation and performance (Darroch, 2005)743 surveys were mailed out and 443 were returned and usable (27.8 percent response rate. Research that discusses KM in IB varies in focus, including research from Cader et.al (2013), which states that IB are more involved in KM than conventional banks in the UAE. Nurdin and Yusuf (2020) examine the KM lifecycle model in IB, and Abuazoum et al. (2013) studies knowledge sharing in Islamic banking. However, none of these studies were completed in the context of Indonesia or the development of a model to support organizational performance.

Organizing the Concepts

Once the concepts are identified, they must be organised. This means identifying and describing the relationships among them. This leads to the development of propositions that should be tested. The first proposition is that service innovation will improve organizational performance. Previous literature has stated that service innovation influences organizational performance by decreasing operational costs (Panesar & Markeset, 2008); increasing sales revenues (Kubeczko et al., 2006; Mansury & Love, 2008), and improving organizational profitability (Matear et al., 2004). Previous research conducted across countries found that innovation influences organizational performance (Baldwin & Johnson, 1996; Dwyer & Mellor, 1993). Organizational performance in those studies was determine using various measurements such as size, growth rate, return on investment, profitability, and market share. This shows that innovation influences different aspects of organizational performance. Other researchers found that the type and absorption time of innovation have an impact on business performance. Yamin et al. (1997) found that process innovation more strongly predicts organizational performance than product innovation does.

The second proposition is that human capital drivers will improve organizational performance. Human capital is the most valuable organizational asset; it is an invisible asset that boosts organizational performance. Some empirical studies support this proposition, such as a study that found that human resource flexibility is positively correlated with return on sales, operating profit per employee, and sales per employee (Bhattacharya et al., 2005). Another study proved the positive and significant relationship between human capital efficiency and organizational performance (Azlina et al., 2017; Jamal & Saif, 2011); Other research has shown that human capital value can improve companies' market values (Hajiha & Hansanloo, 2009).

The third proposition is that KM capability will increase organizational performance. There are various research studies about the relationship between these variables, focusing on the link between human capital management and KM to increase organizational performance (Afiouni, 2007), and the correlation between KM capability, the processes, and performance (Lin, 2013). The three components of KM capability that influence organizational performance are the organization's capacity to create new knowledge, build on it, and capture a high proportion of subsequent spin-offs (Bogner & Bansal, 2007).

The fourth proposition is that service innovation acts as the mediator between human capital drivers and organizational performance. Previous literature, theories, and empirical evidence explain the relationship between human capital and organizational performance but scarcely explain the value of innovation as a mediator (Camisón & Villar-López, 2014). Different research contexts propose the correlation between human capital and desired performance and outcomes, such as SME development, job creation, innovation, and economic development (Frese et al., 2002; Cao et al., 2016; Sarwar et al., 2016). Further Sarwar et al. (2016) found that innovation mediates the relationship between human capital and organizational performance. Human capital creates and stores knowledge (Smith et al., 2005), and has the capacity to absorb, organise, and create knowledge as a source of innovation. From this proposition, we can conclude that human capital has a pivotal role in creating service innovations. Meanwhile, the innovation of products and services is a significant organizational performance determinant (Damanpour, 1991). The introduction of new services will increase the market share rate, which in the long run, will improve organizational performance.

The fifth proposition is that service innovation acts as a mediator between KM capability and organizational performance. Jyoti et al. (2011) stated that the impact of KM on organizational performance mainly relates to the ability of organizations to innovate by improving both products and processes. Previous research asserted that that effective KM is mediated by innovation to increase organizational performance (Darroch, 2003; Gold et al., 2001; Han et al., 1998). KM then could be viewed as creating organizational performance through service innovation. Of these variables, this paper concentrates on the role of service innovation, leaving a discussion of the specific meaning for a future paper. Service innovation was selected as the first object of this model due to its important mediating role.

When we consider our model, we must define its scope and boundaries, as indicated in Figure 3, to define the limits and conditions that apply to the proposed model. In this case, the boundaries are Islamic banking and the Indonesian context. The first boundary is Islamic banking because (1) Islamic banking's vision is specific not only for profit, like other

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organizations, but also for wealth; (2) it is specific vision has implications for its operational, management, human capital, and organizational performance; (3) its differences from conventional banking are already well established; and (4) its products should follow not only customer needs but also sharia, so they require more innovation than other.

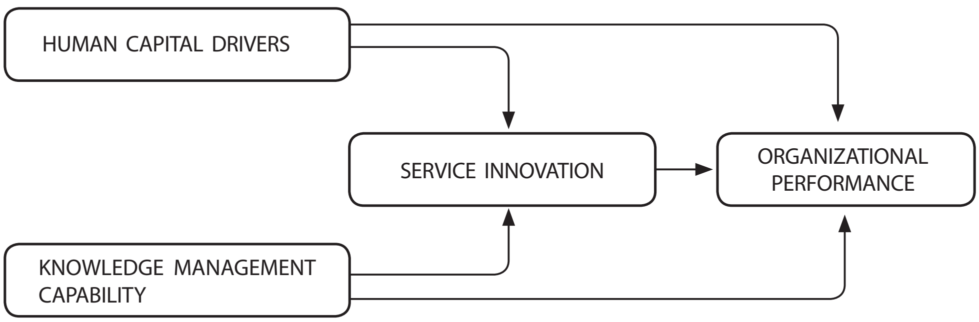
This paper explores Islamic banking in the Indonesian context, taking the following considerations into account: (1) it is still low in terms of service innovation, (2) it has problems with human capital, and (3) it needs to improve its KM capabilities. This paper's domain is consequently a model of organizational performance concerning KM capability, human capital drivers, and service innovation using the conceptualization phase method in IIB.

Outputs of the Conceptualize Phase

Based on the conceptual phase above, this study proposes a model that illustrates the dynamic relationship between IIB performance and the three variables that are suspected to be the causes. The model and detailed explanation are discussed in the next section to describe the final result that will integrate all the paper processes.

The final result from the conceptualization model is an integrated model of IIB performance, as presented in Figure 4. In general, the model illustrates the relationship between the six propositions explained in the sections above, but this model adds a more detailed explanation about the dimensions of each variable explicitly.

Figure 4. An integrated model of Indonesian Islamic Banking Performance



(Source: Author's Analysis)

There are six propositions (P1–P6) in this model divided into three primary relationships below:

Organizational performance is influenced directly by service innovation (P1), human capital drivers (P2), and KM capability (P3).

Islamic banks are industries whose products are services, so innovations in the service sector will improve organizational performance. It cannot deny that there is a strong relationship between product/service innovation and market attention, which will influence performance. To develop service innovations, an organization should consider developing a new value system, a new service concept, a new customer interaction, and a new delivery system and technology.

In Islamic banks, there are issues embedded in hiring non-Muslim staff and contractors who lack knowledge of sharia. This condition would present a problem should they run the bank's operations. To overcome the issue and develop a more profound comprehension of its staff's needs and requests requires bolstering the learning sharing. Learning and improving knowledge about sharia in operation should be enabled using KM. If every person in the organization knows these needs, personal knowledge will become organizational knowledge and boost innovation and organizational performance.

Bassi & Mcmurrer (2006) developed a human capital driver methodology to identify and manage human capital management process variations that affect organizational performance. With a tool to measure human capital management, an organization can start assessing how well they manage and develop their people. The human capital department must undertake the strategic responsibility of making sure effective human capital management becomes a priority in its culture. Daily coaching, mentoring, and monitoring of human capital activities in the organization can improve organizational performance in the long run.

Service innovation is a mediating variable between human capital drivers (P4), KM capability (P5), and IIB performance, which means service innovation, is a crucial variable that can boost organizational performance.

The two variables above can improve service innovation and, eventually, organizational performance. Innovation should be the central aspect to develop. The development should do at every level, in every division, and among every person in the organization.

Human capital drivers will improve KM capability (P6). Optimizing human capital driver dimensions, including employee engagement, leadership practices, knowledge accessibility, workforce optimization, and learning capacity, can improve KM capabilities.

Conclusion

This study proposes a model to improve IIB performance; organizations should pay attention to the close integration of service innovation, KM capability, and human capital drivers. Since Islamic banks have specific characteristics and visions, service innovation is the key to developing competitive products and services to fulfil customer needs, achieve organizational visions, and satisfy stakeholders. These conditions can boost organizational performance, so innovation must become the central variable to strengthen. Maximizing KM capability and human capital drivers can increase Service innovation.

There are several practical implications. Firstly, for Islamic banking should develop a system in which every person at every level in the organization can be an innovator since service innovation as a moderating variable is a key to boosting organizational performance. Secondly, attention toward management indeed, the impact is not seen directly on organizational performance, such as financial ratios, but it will give a continuous improvement in an organization's overall performance in the long run. In this case, Islamic banking should improve human capital drivers and KM within the organization. Thirdly, as a regulator, the Financial Services Authority needs to campaign not only for regulations and hard skill

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competency but also for soft skill competency for organizations or people involved in Islamic banking activities.

The proposed model creates from theoretical studies; an empirical study needs to evaluate the proposed model's practical applications. Further studies should emphasize the validation of the proposed model in terms of its significance and practicality. Testing the proposed model in an empirical situation (such as Islamic banks, conventional banks, or organizations) will provide useful information for professionals in implementing the proposed model. This paper has not yet demonstrated the overall management variables that affect organizational performance. Further research should determine other management factors that affect organizational performance in different contexts. An alternative area for future research is the question of how to develop innovative services, KM capabilities, and human capital drivers in Islamic banks, precisely and in organizations in general.

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Recent Development of Islamic Banking Performance Measurement

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Abstract. *This study aims to review the development of research related to Islamic banks' performance measurement and various alternative models. It uses a meta-analysis approach to identify other previous studies from various journals and relevant researches. The results show that the measurement of Islamic bank performance mostly uses financial performance measurements similar to conventional bank performance measurements, which use financial ratios and efficiency. There have been several serious efforts to develop alternative models for measuring Islamic banks' performance to reflect their nature and objectives better. These models include the Islamicity Index, Economic Contribution and Muslim Communities, Social Performance Index, Maqashid Index, and Islamic Bank Maqashid Index. However, eventually, these models are still in the early stages of development and have several weaknesses. Thus, it is still necessary to develop a model for measuring Islamic bank performance relevant to its philosophy and objectives.*

Keywords: *performance measurement, organization performance, Islamic banking*

JEL Classification: G21, L25

Abstrak. *Penelitian ini bertujuan untuk meninjau perkembangan penelitian terkait pengukuran kinerja bank syariah dan berbagai model alternatifnya. Penelitian ini menggunakan pendekatan meta-analisis untuk mengidentifikasi berbagai penelitian sebelumnya dari berbagai jurnal dan penelitian yang relevan. Hasil tinjauan menunjukkan bahwa pengukuran kinerja bank syariah masih dominan menggunakan pengukuran kinerja keuangan yang mirip dengan pengukuran kinerja bank konvensional, menggunakan rasio-rasio keuangan dan efisiensi. Terdapat sejumlah upaya serius pengembangan alternatif model pengukuran kinerja bank syariah agar lebih mencerminkan hakikat (nature) dan tujuannya. Model-model tersebut antara lain: Islamicity Index, Kontribusi Ekonomi dan Komunitas Muslim, Indeks Kinerja Sosial, Maqashid Index, dan Indeks Maqashid Bank Syariah (IMBS). Namun dalam perkembangannya model-model tersebut masih dalam tahap awal pengembangan dan memiliki sejumlah kelemahan. Sehingga dengan demikian, masih diperlukan pengembangan model pengukuran kinerja bank syariah yang relevan dengan filosofi dan tujuannya.*

Kata Kunci: *pengukuran kinerja, kinerja organisasi, perbankan syariah*

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Introduction

Islamic banking has developed globally and is proliferating over the past three decades, despite economic and political uncertainties in many regions throughout the world. Islamic banking has declared more resilient than conventional banking on the effects of the global financial crisis shocks (Kasim & Majid, 2010; Hasan & Dridi, 2010, 2011; Khediri et al., 2015; Hussein et al., 2019). Furthermore, Islamic banking can control costs well, so it is considered more efficient than conventional banking (Rahim et al., 2013; Saeed & Izzeldin, 2016; Safiullah & Shamsuddin, 2018). Islamic banking offers its customers several attractive features in products and services in experiencing an expeditious growth. However, some argue that Islamic banking has failed to deliver tangible social results, so it needs to improve its performance (Asutay, 2007; Sairally, 2007; Asutay, 2012; Mohd Nor, 2016; Mohd Nor et al., 2016; Hamidi & Worthington, 2018).

In the development of Islamic banking, there are no standard measurement tools to evaluate Islamic banking's appropriate and relevant performance (Ascarya et al., 2017). In general, the Islamic banking performance measurement model is still a new academic discourse even though the theme related to Islamic banking performance has become a broad discussion. Also, in-depth research related to the theoretical basis, concepts, and methods of measuring Islamic bank performance is still limited.

Research on Islamic bank performance measurement models is also related to research in strategic management that can classify in two interrelated flow: substantive and measurement (Schwab, 1980; Venkatraman & Grant, 1986; Carton, 2004; Carton & Hofer, 2006). Substantive flow is related to studies that focus on theoretical relationships between independent and dependent variables. The measurement flow is related to the validity of the operationalization of concepts and constructs, both the measurement of independent and dependent variables. According to Carton and Hofer (2006), the flow of measurement research in its development has received little attention so far, mostly related to the measurement of the dependent variable.

As the concept of performance is contextual, the condition of an organization uses to represent performance. In its development, most management research focuses on performance determinants. Research related to measurement is still limited, even though it is a fundamental and essential factor (Carton, 2004; Carton & Hofer, 2006; Logofatu & Stefanescu, 2017; Stefanescu & Logofatu, 2018). The performance measurement methods of Islamic banking also still lacked in-depth discussion and research. The accurate and comprehensive performance measurement for Islamic banking is crucial in developing effective and sustainable Islamic banking.

Lucianetti et al. (2019) provide empirical evidence regarding the relationship between the completeness of performance measurement systems and organizational effectiveness. Neely et al. (2015) also show that acceptable performance measurement practices can significantly contribute to organizational robustness and sustainability if applied carefully and creatively. Severgnini et al. (2018) also emphasize that the performance measurement system has increased the organization's extraordinary dexterity and ambidexterity and, consequently, affects organizational performance.

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This study provides at least three contributions to the development of research related to Islamic banks. First, mapping the development of researches in the measurement of Islamic banking performance that has widespread use and various efforts to develop new methods from the early period of the establishment of Islamic banks up to the present time. Second, this research fills the research gap regarding the measurement model of Islamic banking performance, which is still limited and is still a new academic discourse. Third, this research is fundamental to see the possible direction of further development so that Islamic banking has a standardized performance measurement model that can evaluate how appropriate and relevant Islamic banking's performance is to its nature and objectives.

Methods

With relevance to the research objectives, this study uses a meta-analysis approach to identify relevant research in various journals and relevant research based on developing research topics (Fetscherin & Heinrich, 2015; Alon et al., 2018). This study also refers to bibliographic research as part of the meta-analysis approach, as carried out by Dewi et al. (2018) and Setyaningsih & Setiawan (2019), although it is more limited in research substance.

Due to the limited number of research in this area, the publication criteria from previous studies include all journals and research accessible and following this theme. This research uses a thematic approach that follows to gather most research published in the last 30 years that discusses the theory, development, and use of various alternative models of Islamic bank performance measurement. This study has followed three main themes: Islamic bank performance, model development of Islamic bank performance measurement, and various existing performance measurement models.

Result and Discussion

In general, Islamic banks' performance measurement still mostly uses performance measurements that are similar to conventional bank performance measurements that use financial ratios and efficiency (technical and cost). Various methods mostly measure Islamic banking performance with approaches to measuring efficiency and financial performance, which tend to be the same as conventional bank performance measurement. The measurement of Islamic banking efficiency commonly used is Data Envelopment Analysis (DEA) method. The majority of research in this realm compares the efficiency between Islamic banking and conventional banking to see which one is more efficient. Then, some studies combine DEA with the Malmquist Productivity Index to measure Islamic banking productivity (Ahmad & Rahim, 2012; Alkheil et al., 2013; Johnes et al., 2014; Mobarek & Kalonov, 2014; Sillah & Harrathi, 2015; Masum et al., 2016; Abbas et al., 2016; Kamarudin et al., 2017; Hafez, 2018). Other efficiency studies use the stochastic frontier model, meta-frontier approach, and meta-frontier Malmquist productivity index (MPI) (Abid et al., 2018; Johnes et al., 2018).

Financial performance measurement approaches are also commonly used to measure the performance of Islamic banking from various countries (Usman & Khan, 2012; El-

Mosaid & Boutti, 2012; Alkheil et al., 2013; Wasiuzzaman & Gunasegavan, 2013; Eljelly & Elobeed, 2013; Hadriche, 2015; Noman et al., 2015; Khediri et al., 2015; Zaheer & Jamil, 2016; Rashid & Jabeen, 2016; Khan et al., 2017; Airout & Airout, 2017; Doumpos et al., 2017). Financial ratios from the CAMEL framework (capital, assets quality, management, earnings, and liquidity) often use to measure Islamic banking performance. Both only the CAMEL ratio use to measure Islamic bank performance or combined with macroeconomic variables such as inflation, GDP, interest rates, and unemployment rates (Kouser & Saba, 2012; Erol et al., 2014; Ifeacho & Ngalawa, 2014; Hadriche, 2015; Rashid & Jabeen, 2016; Suresh & Bardastani, 2016). Likewise, researches in Islamic banking performance in Indonesia use many approaches to measuring financial performance (Mahfudz, 2006; Rosyadi, 2007; Arsil, 2007; Prawira, 2007; Siswantoro 2014; Abusharbeh, 2016; Sukmana & Febriyati, 2016; Setyawati et al., 2017; Hamid et al., 2017; Saiful & Ayu, 2019).

In addition to the financial approach, some studies seek to formulate alternative models for measuring Islamic banks' performance that is more in line with their nature and objectives. Efforts to formulate an alternative measurement model because Islamic bank performance with the financial approach sees as not paying attention to broader stakeholder goals and macroeconomic goals (Ascarya et al., 2017). Moreover, measuring Islamic banking performance with the use of financial performance measurements using conventional bank performance measurement models is seen as incompatible with the philosophy and character of Islamic banks.

According to Hameed et al. (2004), performance evaluation root in the Muhasabah concept highly recommends for both individual and corporate scale from an Islamic perspective. The Muhasabah concept can be an essential philosophical foundation for representation of performance evaluation in modern Islamic organizations or institutions, including Islamic banking. They also stressed that financial performance measurement tools such as ROI (return on investment) derived from the paradigm of Western civilization thinking, including those used for conventional banking, are not entirely appropriate because it bases on a positivist utilitarian paradigm. It then leads the researchers to formulate alternative performance measures for Islamic banks. There are strong aspirations from researchers and thinkers to develop alternative models of Islamic bank performance measurement to reflect nature and its objectives better.

From the results of this study, from the early period of Islamic banking development to the present time, the development of alternative models for measuring Islamic banks' performance is limited and still early. Some alternative models of measuring the performance of Islamic banks that develop can group as follows. First, Islamicity Index, Economic Contribution and Muslim Community, and Social Performance Index (Samad & Hasan, 2000; Hameed et al., 2004; Setiawan, 2009; Aisjah & Hadianto, 2013; Zainal & Putra, 2016; Mukhibad et al., 2017; Wiranata & Rama, 2018; Sabirin, 2018; Mutia et al., 2019); Second, Maqashid Index and Islamic Bank Maqashid Index (Mohamed et al., 2008; Mohamed & Taib, 2009, 2015; Antonio et al., 2012; Hartono & Sobari, 2017; Asutay & Harningtyas, 2015; Ascarya et al., 2016; Qasim et al., 2017; Ascarya et al., 2017).

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Table 1. Some of the Islamicity Index and Social Performance Research

Researcher	Objectives	Dimension and Variables	Results
Samad & Hasan (2000)	Comparative performance of Islamic banks and conventional banks	Financial performance: ratio profitability, liquidity, risk and solvency. Economic Development Commitment: (1) Long term loan ratio (LTA): long term loan/total loans; (2) Government Bond Investment ratio (GBD): Deposit invested in government bond/Total Deposit; (3) Mudaraba-Musharaka Ratio (MM/L): Mudaraba-Musharaka/Total Loans.	The contribution to development is no better compared to conventional bank groups, although the F-value is not significant.
Hameed et al. (2004)	Formulating Islamicity Disclosure Index and Islamicity Index.	Islamicity Index with variables: Profit-sharing ratio; Zakat performance ratio; Equitable distribution ratio; Directors-Employees welfare ratio; Islamic Investment vs Non-Islamic Investment ratio; dan Islamic Income vs Non-Islamic Income ratio.	Bahrain Islamic Bank (BIB) generally has better social performance than the Islamic Bank of Malaysia Berhad (BIMB).
Setiawan (2009)	Continuing to develop measurement of social performance in Islamic banks.	Financial Performance: Asset Quality, Rentability, and Liquidity Social Performance: Ratio of Contributions to Economic Development, Contributions to the Community, Contributions to Stakeholders, Increased SDI and Research, and Distribution of Economic Development.	During the period of 2003-2007, BSM's social performance was better than BMI. While BMI's financial performance is better than BSM in the same period.
Aisjah & Hadianto (2013)	Evaluating the performance of Islamic banks in Indonesia during 2009-2010	Islamicity Index (Hameed et al., 2004) with variables: Profit-sharing ratio; Zakat performance ratio; Equitable distribution ratio; Directors-Employees welfare ratio; Islamic Investment vs Non-Islamic Investment ratio; and Islamic Income vs Non-Islamic Income ratio.	The performance of Islamic banks in Indonesia gets a satisfactory level of assessment. However, there are two unsatisfactory ratios: the zakat performance ratio and the director-employee welfare difference ratio.
Sabirin (2018)	Evaluating the performance of Islamic banks in Indonesia during 2013-2017	Islamicity Index (Hameed et al., 2004) with variables: Profit-sharing ratio; Zakat performance ratio; Equitable distribution ratio; Directors-Employees welfare ratio; Islamic Investment vs Non-Islamic Investment ratio; dan Islamic Income vs Non-Islamic Income ratio.	The performance of Islamic banking in Indonesia is quite good. However, there are two unsatisfactory ratios, namely the zakat performance ratio and the director-employee welfare ratio. This study shows that zakat paid by Islamic banks in Indonesia is still low and there is still a large gap between the welfare of directors and employees.
Mutia et al. (2019)	Evaluating the performance of Islamic banks in Indonesia	Five ratios are used in Islamicity Performance Index: profit sharing, charity, equitable distribution, the welfare of directors and employees and incomes, Islamic vs. non-Islamic income source.	Bank of Muamalat Indonesia well applied the best performance of profit sharing ratio, charity welfare of directors and employees. Bank of Sharia Mandiri had the highest place in the implementation of the Equitable Distribution Ratio. Bank of BRI Sharia had the highest position in determining the Islamic Incomes vs. Non-Islamic Incomes ratio. The conclusion for overall is the Islamic Banks have applied the Islamicity Performance Index in performance measurement.

The earliest attempt to develop alternative performance measures for Islamic banks was made by Samad & Hasan (2000) two decades ago. This effort is based on an awareness that Islamic banks' performance is sufficiently measured by financial performance and its contribution to the economy and its alignments with the Muslim community. To evaluate the economic contribution and its partiality of Islamic banks toward the Muslim community, Samad & Hasan (2000) use several variables as follows: (1) Long term loan ratio (LTA): long term loan/total loans; (2) Government Bond Investment ratio (GBD): Deposit invested in government bonds/Total Deposit; (3) Mudaraba-Musharaka Ratio (MMR): Mudaraba-Musharaka/Total Loans.

The next serious attempt to formulate alternative performance measurement methods unique to Islamic banks is carried out by Hameed et al. (2004). In addition to formulating the Islamicity Disclosure Index, an Islamicity Index was also formulated. This effort can call as the first attempt to develop alternative performance measurement tools for Islamic banks in an index with a separate name. In the Islamicity Index, Hameed et al. (2004) included six main performance variables: Profit-sharing ratio, Zakat performance ratio; Equitable distribution ratio, Directors-Employees welfare ratio; Islamic Investment vs. Non-Islamic Investment ratio; and Islamic Income vs. Non-Islamic Income ratio. This research has become an essential initial foundation to see the possibility of developing alternative models for measuring Islamic banks' performance by bringing up new performance variables that are considered following the nature and unique character of Islamic banks. Efforts to develop dimensions, elements, and proxies for Islamic bank social performance were then continued by Setiawan (2009) by synthesizing the Samad & Hasan (2000) approach, Hameed et al., (2004), as well as proxies for Islamic bank health assessment from Bank Indonesia (2007) which has a social dimension.

In general, there are quite a lot of subsequent studies that try to evaluate the performance of Islamic banks using the Islamicity Index method and measurement of social performance that has developed both overall and by taking some of its variables (Aisjah & Hadianto, 2013; Laela, 2014; Zainal & Putra, 2016; Mukhibad et al., 2017; Wiranata & Rama, 2018; Sabirin, 2018; Mutia et al., 2019). Unfortunately, these studies only use these methods without further development related to developing dimensions, variables, and their proxies (see Table 1).

Next, research on the development of alternative models for measuring Islamic banks' performance that is increasingly conducted is performance measurement based on Maqashid Sharia or Maqashid Index. The models vary from simple to complex ones. In general, Maqashid Index becomes quite popular as the term is commonly used in academic researches. Nevertheless, there is little methodological discussion and the possibility of its use in practice. This study identifies at least three (3) developments in the Maqashid Index model that will discuss further. (Details see Table 2).

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Table 2. Variants of the Maqashid Index Model

Models	Number of Dimensions and Variables	Researchers
Three Objective *Maqashid Index*	3 dimensions and 10 variables	Mohammed et al. (2008); Mohammed & Taib (2009 & 2015)
	3 dimensions and 9 variables	Qasim et al. (2017)
Eight Objective Maqashid Index	8 dimensions dan 38 variables	Asutay & Harningtyas (2015)
Five objective Maqashid Index	5 dimensions dan 18 variables	Ascarya et al. (2016)
	5 dimensions dan 65 variables	Ascarya et al. (2017)

First, the Maqashid Index that using three Objectives. Mohammed et al. (2008) initiated the earliest attempt to formulate the Maqashid Index to measure Islamic banks' performance. The research's main objective is to identify the ideal objectives of Islamic banking from the theory of Maqasid al-Shari'ah by exploring relevant Sharia literature and sources. They elaborated on Abu Zaharah's concept of Maqashid Sharia and found three final goals that must be achieved by Islamic banks: (1) Tahdhib al-Fard or Individual Education; (2) Iqamah al-'Adl or Enforcement of Justice; and (3) Jalb al-Maslahah or Public Benefit. The second objective of their research proposes that besides financial (commercial) measures, Islamic bank performance measures the three identified objectives. It clearly shows that from the very beginning, the Maqashid Index was designed by negating financial (commercial) measures and being a complementary performance measure. Therefore, the initial model is generally dichotomous, separating financial performance from maqashid performance.

In formulating the Index, Mohammed et al. (2008) used Sekaran's Method to operationalize Islamic banking's objectives into measurable dimensions. Deriving the concept's dimensions, which were then formulated into elements that made it possible to be observed and measured to form an index of concept measurement, developed it. Data used for this Index derive from financial statements and corporate governance reports. The model continues its development in the following Mohammed & Taib's publications (2009, 2015). The Maqashid Index model developed by Mohammed and Taib is widely used by subsequent researchers, including Antonio et al. (2012); Hartono & Sobari (2017); Qasim et al. (2017); Rusydiana & Sanrego (2018); and Hosen et al., (2019). Qasim et al. (2017) developed a slightly different Maqashid Index by subtracting one element from the previous Index.

Secondly, the Maqashid Index using eight goals. Asutay & Harningtyas (2015) developed the Maqashid Index, referring to the thoughts of Al-Najjar with the classification of eight (8) pillars of Islamic Maqahid to measure the performance of Islamic banks in several countries. For industrial performance, there are eight most critical Maqashid indicators according to the Al-Najjar perspective, namely safeguarding the lives, faith, and rights of stakeholders, followed by safeguarding assets, social, intellectual, and hereditary entities, and finally, the goal of ecological preservation.

In building its Index, Asutay & Harningtyas (2015) combined weighting based on the Islamicity Disclosure Index, Ethical Identity Index, and CAMEL ratio while transforming the Maqashid Sharia elements into performance ratios. This model produces a fairly complex performance index, both academically but challenging to use for broader practice. For example, for the final objective component, safeguarding the physical environment, which includes the aspects of wealth and ecology, reduces quite some dimensions and elements that must be assessed quantitatively and qualitatively.

Asutay & Harningtyas (2015) also use visual graphics with geometric and mathematical approaches. The Hexagon Method (Bedoui & Mansour, 2015) used them in measuring the performance of Maqashid Sharia. They also formulated the Maqashid Sharia General Performance (GP) by using a balanced-orientation Maqashid performance measure formed from the sum of the eight alignments with each maximum objective value equals eight (8). According to this study, the achievement of Islamic bank performance is not satisfactory due to the lack of achievement of social goals and environmental preservation. Bank of Sharia Mandiri (BSM) obtained the highest value with a score of 59.41 percent from 282.84 percent, and the lowest, the European Islamic Investment Bank (EIIB) obtained 7.01 percent. Meanwhile, for the country's performance, the highest score was obtained by Indonesia (56.83 percent), followed by Pakistan, Malaysia, Turkey, Qatar, and the United Kingdom. In further developments, unfortunately, researchers in subsequent studies have not used the Maqashid Index Asutay & Harningtyas's (2015) model as it is very complex and impractical to use.

Third, Maqashid Index that using five objectives. The next attempt to develop the Maqashid Index with a new name is the Islamic Bank Maqashid Index, which was carried out by Ascarya et al. (2016) by developing the concept of Al-Ghazali's Maqashid Sharia with five main objectives. The concept of Al-Ghazali's Maqashid Sharia initially elaborated by Chapra (2008), who made it details on each of the five objectives to reach 42 elements. Then it was modified by Bedoui & Mansour (2015), which gave weight to each of the 42 elements. By combining weighting and transforming these elements into performance ratios, they use visual graphics (pentagon) through a combination of geometric and mathematical approaches. They then visualize all the Maqashid Sharia performance into a spider chart form.

Ascarya et al. (2016) then elaborated on the weighting carried out by Bedoui and Mansour (2015) by using the Analytical Network Process (ANP) and regrouping the categories of each Chapra element (2008). The difference is in the weighting conducted by Bedoui & Mansour based only on descriptive analysis and literature review, but Ascarya et al. (2016) weighted using the Analytical Network Process (ANP). Their research then limited the dimensions of the Index to four dimensions for each of the five objectives, citing observable data availability. Then, from the weighted results of the Maqashid Sharia dimensions selected above, they interpreted the Maqashid Sharia elements' proxy with the Sekaran's Concepts of Operationalization Method (SCOM).

Until now, no ones researchers have used the Islamic Bank Maqashid Index model in subsequent studies in its development. This condition is likely because researchers prefer to use the simpler Mohammed & Taib Maqashid Index Model. Ascarya et al. (2017) then continued their research related to the Islamic Bank Maqashid Index that was different from the Islamic Bank Maqashid Index design in a previous study that derived elements

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from Maqashid Sharia. The research develops a new concept based not only on the Al-Ghazali's Maqashid Sharia with 5 (five) objectives but also interconnected with socio-economic objectives with 3 (three) objectives. These three objectives relate to the objectives of establishing an Islamic bank economically and the law.

According to Ascarya et al. (2017), it is an effective way to implement the dimensions proposed by Chapra (2008), where these dimensions do not have to be mutually exclusive to represent just one of the objectives of Sharia. However, because Chapra's dimensions aim at general economic development, modifications need to make to be applied in Islamic banks. There are conditions where the elements affect more than one goal.

In the study of Ascarya et al. (2017), sub-aspects of the sub-aspects' goals and dimensions using the Delphi Method are carries out by involving experts and scholars. From the Delphi method, the results of socio-economic objectives include (1) Commercial; (2) Social; and, (3) Macro. Each goal has 4 (four) or 5 (five) factors or sub-aspects, and each sub-aspect has 5 (five) elements. Commercial goals have 5 (five) sub-aspects and 25 elements, Social goals have 4 (four) sub-aspects and 20 elements, and Macro goals have 4 (four) sub-aspects and 20 elements. Weighting objectives, sub-aspects, and elements are then carried out using ANP, so the Islamic Bank Maqashid Index calculation is carried out in two stages using the ANP Two-level Additive Weighting (ATAW) method.

Table 3. Identification of Weaknesses in Islamic Bank Performance Measurement Models

Measurement Model	Researcher	Weakness
Measurement of Financial Performance	Usman & Khan (2012); El-Mosaid & Boutti (2012); Alkheil et al. (2013); Wasiuzzaman & Gunasegavan (2013); Eljelly & Elobeed (2013); Hadriche (2015); Noman et al. (2015); Khediri et al. (2015); Zaheer & Jamil (2016); Rashid & Jabeen (2016); Khan et al. (2017); Airout & Airout (2017); Doumpos et al. (2017); Mahfudz (2006); Rosyadi (2007); Arsil (2007); Prawira (2007); Siswantoro (2014); Abusharbeh (2016); Sukmana & Febriyati (2016); Setyawati et al. (2017); Hamid et al. (2017); Saiful & Ayu (2019)	Not entirely appropriate to apply to Islamic banks. The positivist utilitarian paradigm as the main target or only focuses on commercial or business performance (Hameed et al., 2004).
Islamicity Index and Social Performance Index	Samad & Hasan (2000); Hameed et al., (2004); Setiawan (2009); Aisjah & Hadianto (2013); Mukhibad et al., (2017); Wiranata & Rama (2018); Sabirin (2018); Mutia et al. (2019)	It is still partial and has not accommodated all Islamic banks' objectives, and the method is not developed further. Only a complementary performance measure of financial performance.
Three objective Maqashid Index	Mohammed et. al. (2008); Mohammed & Taib (2009 & 2015); Qasim, et al. (2017)	Made in a partial dimension, causing the indicators obtained can not be used to evaluate the Maqashid performance of Islamic banks holistically (Ascarya et al., 2017). From the beginning, it was developed by negating financial (commercial) measures and being a complementary performance measure.
Eight objective Maqashid Index	Asutay & Harningtyas (2015)	Too complicated and impractical to use, so no one uses it in the subsequent research.
Islamic Bank Maqashid Index	Ascarya et al. (2017)	Cannot be used at this time because the data needed by 65 elements and their proxies require a new information and reporting system that must be designed by the authority (OJK) to accommodate new data (new ratios and proxies)

Next, Ascarya et al. (2017) outlined the dimensions of elements and elements to ratios from sub-aspects using the Sekaran's Method by involving practitioners, experts, and regulators. This process expects to produce elements and ratios that are relevant, measurable, and the data can be obtained and not limited by only available data and reports. With the Sekaran's Method, the dimensions, elements, and ratios (or proxies) of the 65 elements generated. A proxy derives from an element by finding the ratio that best reflects that element, regardless of whether the data is available or not.

The application or use of the Islamic Bank Maqashid Index following the results of Ascarya et al. (2017) research can take several alternatives. First, Islamic Bank Maqashid Index directly adopted the overall model with 65 elements from 5 (five) Commercial sub-aspects, 4 (four) Social sub-aspects, and 4 (four) Macro sub-aspects. Second, Islamic Bank Maqashid Index adopted an initial model with 30 elements, ten elements each for Commercial, Social and Macro aspects. Third, Islamic Bank Maqashid Index adopts a core model with one of the essential sub-aspect elements for the three Commercial, Social and Macro aspects (details see Table 3).

Ascarya et al. (2017) research on Islamic Bank Maqashid Index continued and aimed to produce a holistic index, which tends to be complicated and impractical. This model cannot use as well because, as stated, it requires the development of a new Islamic bank reporting system for authorities, especially the Financial Services Authority (OJK) and Bank Indonesia (BI). The proxies they used chosen were not limited to existing reports but with specific special needs that are not present in Islamic banking reporting. In general, it can identify that the research of Ascarya et al. (2017) is the latest research seeking to develop alternative methods for measuring Islamic banks' performance.

Conclusion

Eventually, the measurement of Islamic bank performance mostly uses performance measurements similar to conventional bank performance measurements using financial ratios and efficiency (technical and cost). This performance measurement model tends to pay attention to shareholders' financial goals only and does not pay attention to broader stakeholder goals, as well as economic goals and other social goals. With these conditions, there is a strong aspiration to develop alternative models for measuring Islamic banks' performance to reflect their nature and objectives better. However, the development of Islamic bank performance measurement models is still limited and in the initial stages from the beginning of Islamic banks' development up to the present time. Some examples are the Islamicity Index, Economic Contribution and Muslim Communities, Social Performance Index, Maqashid Index, and Islamic Bank Maqashid Index. These models from the results of this study still have several weaknesses. The Islamicity Index, Economic Contributions, and the Muslim Community, and the Social Performance Index are still straightforward and have not been developed by researchers. Some subsequent studies use the Islamicity Index and Social Performance Index to assess Islamic banks' performance without further developing the methods and elements.

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Furthermore, it also concludes that there are many studies on the performance of Islamic banks that use the Maqashid Index, and there have been several attempts to build their methods with various variants. Nevertheless, some weaknesses of the Maqashid Index that have existed, among others, are made in a partial dimension. This condition causes the indicators obtained can not be used to evaluate the performance of Islamic banks holistically. The development of the Maqashid Index with a more complex dimension also caused the model's inability to be used by subsequent researchers because of its complexity and the availability of data standards that still require changes in the information system of the authority.

Therefore, it is still necessary to develop methods for measuring the performance of Islamic banks that are relevant to their nature and purpose in the future. A relevant, useful, and comprehensive performance measurement is vital for the effectiveness, resilience, and sustainability of Islamic banks' development in the future. Moreover, the performance measurement method also needs to absorb executive officials and decision-makers' aspirations in the management of Islamic banks and regulators. This condition is essential so that the performance measurement methods formulated close to the possibility of their use in Islamic bank strategic management practices are not merely academic studies.

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The Relationship of Macro-risk Indicators, Internal Factors, and Risk Profile of Islamic Banking in Indonesia

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Abstract. *This study is essential because Islamic banks have a higher NPF level than conventional banks and examine whether macroeconomic indicators (macro-risk), internal factors of banking (GCG-earnings-capital) risk profile correlate term Indonesian Islamic banking. The method used is the correlation analysis involving four macro-risk variables (Forex; BI rate; Inflation and GDP), three GEC variables (GCG; ROA, and CAR), and two risk profiles (FDR and NPF). The number of samples is the ten largest Indonesia sharia commercial banks with the 2011-2018 periods. This research finds that macroeconomic indicators positively correlate to non-performing financing (NPF). The GEC positively correlates to NPF and FDR; GEC is negatively correlated to macro-risk indicators. However, some indicators are negatively correlated, such as GDP-corporate governance, Forex-profitability, GDP-efficiency, BI rate-capital, and profitability-NPF. The study proposed managerial implications to understand the relationship between macroeconomic, internal factors, and risk profile in Islamic bank lending.*

Keywords: *Islamic bank, macroeconomic, bank health, non-performing financing*

JEL: D02; G21, G32

Abstrak. *Latar belakang penelitian adalah adanya fenomena tingkat NPF bank syariah relatif lebih tinggi dari bank konvensional. Studi ini meneliti apakah indikator makroekonomi (risiko makro), profil risiko dan faktor kesehatan perbankan (GCG-pendapatan-modal yang dikenal sebagai GEC) memiliki korelasi dalam perbankan syariah Indonesia. Metode penelitian yang digunakan adalah analisis korelasi yang melibatkan empat variabel risiko makro (Valas; BI rate; Inflasi dan PDB), tiga variabel indicator kesehatan bank (GCG; ROA, dan CAR) dan profil risiko yaitu FDR dan NPF. Sampel berjumlah sepuluh bank umum syariah terbesar di Indonesia dengan periode 2011-2018. Kami menemukan bukti yang konsisten bahwa indikator ekonomi makro berkorelasi positif dengan pembiayaan bermasalah, RGEC berkorelasi positif dengan pembiayaan bermasalah dan RGEC berkorelasi negatif dengan indikator risiko makro. Namun, beberapa indikator berkorelasi negatif seperti GDP-corporate governance, Forex-profitability, GDP-efficiency, BI rate-capital dan profitability-NPF. Implikasi managerial studi ini adalah memahami korelasi antara makroekonomi, faktor-faktor internal dan profil risiko dalam pembiayaan bank syariah.*

Kata Kunci: *bank syariah, makroekonomi, kesehatan bank, pembiayaan bermasalah*

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Introduction

The stability and health of the Islamic banking system in Indonesia have become critical after the global financial crisis of 2008. Funding liquidity is considered a critical factor that plays an essential role in bank stability but, at the same time, is a significant determinant of the banking crisis (Hugonnier & Morellec, 2017). The function of banking in the economy is crucial because it controls the fund's distribution from the public (third party) to businesses that require it as one of the leading national economic drivers; thus, the function of banking as intermediation or "heart of the economy" (Apriadi et al., 2017). The development of the Islamic banking industry and financial institutions, both conventional and sharia, follows the corporation's fundamental performance and fluctuations in global, regional, and national economic conditions generally (Santosa, 2011). Thus, Islamic banking's performance and health cannot be separated from internal and external factors because the banking industry always influences by economic conditions in the real sector (Ijaz et al., 2020).

The national banking industry controls around 93 percent of the total national financial assets, of which around 5.3 percent is Islamic banking assets, so if there is a disruption in the banking system's performance or health, it will have a broad impact on the national economy. This role is related to banking as a general intermediary to distribute funds from the financial sector to the real sector. So if there is a shock on macroeconomic factors that will directly or indirectly impact the financial sector and the real sector, banks as intermediaries of the two sectors will also be affected. Thus the function of banking as a "heart of the economy" will also be disrupted (Apriadi et al., 2017; Jacoub et al., 2020).

In general, the Islamic banking risk profile measure through financing deposits ratio (FDR) and non-performing financing (NFF). Where the higher the value of the FDR and the NFF indicates the higher banking risk. Throughout the 2011-2018 period, the NPF value of Islamic banks fluctuated between 2.22 to 4.95%. In general, the NPF trend in sharia banking is not very good because most of it is still above 3.0%. The worst NPF appeared in the 2014-2017 period, which was 4.42% -4.95%. However, in 2018 there was a significant decrease in NPF from 4.76 in 2017 to 3.26 in 2018. The average NPF rate is still far above the conventional banking NPL that is generally below 3.0%.

According to data from the Directorate of Islamic Banking of Bank Indonesia (BI DPbS), the NPF Islamic banking level in 2014 showed 4.95%, and in 2017 NPF is at 4.76%. This figure presents that a very high NPF number indeed triggers Islamic banking risk because it almost touches the NPF that the central bank allows, namely 5.0%. The economic turmoil that is affected by global uncertainty triggers an increase in the value of the USD, a more significant CAD deficit, an increase in inflation, which then has implications for the decline in the value of Gross Domestic Product (GDP). National GDP growth also tends to decline, which in 2017 notes at 5.07%. Inflation also continued to decline with the national economic slowdown accompanied by a decrease in the benchmark interest rate (BI rate) to 4.25%.

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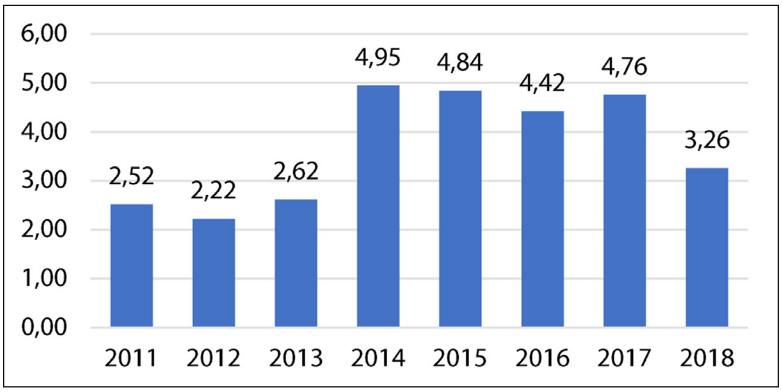
Figure 1. Non-performing financing of Indonesian Islamic banking



Source: OJK (2019)

However, the weakening of IDR-USD has forced BI to increase the BI rate to 5.50% within four months. This policy's impact is that the real sector will worsen because entrepreneurs cannot afford to repay loans to banks due to high-interest rates. On the other hand, this will also reduce the country's purchasing power, where this condition will make economic stability stable, which will increase the NPF value of Islamic banking so that the risk of the profile is increasingly dangerous or fragility (Apriadi et al., 2016).

Some factors that are directly affected by financing problems include the risk profile, governance, earnings (earnings), and capital (capital), which summarize in the rating of which is known as RGEC (Risk Profile, Good Corporate Governance, Earnings, and Capital). The RGEC method takes effect on January 1, 2012, following PBI No. 13/1/PBI/2011 to measure the level of banking health as a substitute for bank health gauges, namely CAMELS. However, the RGEC guidelines for Islamic banks only implements according to POJK No. 8/03/2014, whose substance is similar to RGEC PBI No. 13/1/PBI/2011. These aspects use financial ratios as a basis for assessment (Umiyati & Faly, 2015).

The NPF of Islamic banking is relatively high has triggered a level of risk to bank management because the bank's health is lower and can become a failed bank. Quality financing is one source of problems that often occur because customers fail to meet payment commitments that cause losses to Islamic banks (Santoso et al., 2019). The high NPF indicates account attitudes, financial statement attitudes, business activity attitudes, customer attitudes, and macro-risk attitudes. Furthermore, Santoso et al. (2019) and Setiawan & Monita (2013) explain that the factors that cause non-performing financing (NPF) cause by three elements, namely the Islamic bank (the creditor), the customer (the debtor), and other parties (other parties).

As we know, internal and external factors influenced NPF, including the creditor, debtor, and other parties mentioned above. Internal factors are micro-fundamental variables, namely corporate governance, earnings (profitability and efficiency), financing debt ratio, and capital. The macro-risk factors are macroeconomic variables that are difficult to control by Islamic banking and have a more significant influence than internal factors (Umiyati & Faly, 2015; Anggraeni, 2010). Moreover, macro-risk variables that can increase Islamic banking's risk profile are the IDR-USD exchange rate, BI 7-day repo rate (BI rate) as the benchmark interest rate, inflation, and economic growth (Firmansyah, 2014).

Inflation is a symptom of rising prices of goods that are general and continuous. From these definitions, three components must fulfill so that inflation can be said to increase prices, in general, and to persist. GDP is the value of final goods and services based on market prices produced by an economy in a period using production factors located in that economy (Mishkin & Eakins, 2012). Umiyati & Faly (2015) and Leka et al. (2019) argue that inflation's adverse effects also make GDP value decline. This decline will then affect the decline in domestic savings. In the end, banks as intermediary institutions will lose their sources of investment funds. This situation will undoubtedly put the banking sector's soundness in a dangerous position (Jacoub et al., 2020b). Banks will experience a decline in capacity marked by slowing growth in fundraising, which will reduce the distribution of financing by Islamic banking. This situation is an empirical fact of how an economic factor shock affects banking's health, both conventional and sharia (Apriadi et al., 2017; Muthamimah, 2014).

The relationship of macroeconomic variables (inflation and GDP) and internal variables (NPF), which become the theoretical framework in this study, refers to the theory that explained the relationship between macroeconomic variables and financial and banking stability (Mishkin & Eakins, 2012). The relationship begins with the emergence of shocks on macroeconomic variables (inflation, exchange rates, and GDP). The turmoil that occurred in these macroeconomic variables caused the debtor's asset price to decline. The decline has the potential to cause debtor business problems so that installments and default of principal payments. The failure of the debtor's business makes them unable to repay loans to the bank, which will increase the NPF so that the bank loses money.

In the previous study, Anggraeni (2010) and Santosa (2011) examined the impact of NPF and external factors (GDP and inflation) on the soundness of the Islamic banks period January 2004-April 2007. The analytical methods used were fishbone analysis and rank correlation Spearman. This research shows that NPF only affects 19% of the overall Islamic bank health calculation. The finding also states that NPF has a positive correlation to the APM ratio, and the ratio of GDP has a positive correlation with BOPO. Other findings indicate that the CAR, APM, and APYD ratios on Islamic banks are problematic.

Corporate governance (CG) and agency theory play a vital role in Islamic banking because of agency theory define the conflicts of interests between the managers and investors (shareholders and bondholders) due to conflicts of interest between owners and managers, debtor and managers, owner and debtor agency costs may increase. CG principles in the future back an approach that balances the legal, interest, and expectations of its stakeholders in an ethical, sustainable manner as part of its decision-making comprehensively (Jacob, 2019; Dzingai & Fakoya, 2017). Besides, corporate governance is more fundamental as it influences the bank's performance, which eventually determines the bank's position in the capital market, because the influence of macroeconomics on corporate governance assumes crucial and significance (Jacob, 2019).

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Some previous studies present that among the crucial factors affecting NPL are economic growth, which negatively correlates with the NPL and NPF. Similar studies have found that macroeconomic factors have a significant relationship with NPL and NPF (Alzoubi, 2017; Do et al., 2020). Khemraj & Pasha (2009) stated GDP with a negative impact, but interest rate, inflation, forex, and excessive lending positively correlate with the increase of NPL and NPF. Apriadi et al. (2017) found a negative relationship between NPL and NPF and GDP growth and inflation, but a positive relationship with unemployment. Leka et al. (2019) and Donath et al. (2014) found that the real GDP growth rate and inflation rate- CPI determined bad loans in the banks from Central and Eastern Europe- negatively affect the unemployment rate a positive effect.

Santosa (2011) and Pratiwi (2016) find that internal and macroeconomic factors influence corporate governance compliance. Forex and BI rates positively correlated with GCG, but conversely, inflation rates and economic growth negatively impact GCG. Some previous studies proved that macroeconomics factors as external risk influence to corporate governance compliance in bank managerial (Warrad & Khaddam, 2020; Zhang et al., 2019; Mukhibad et al., 2020).

Al-Homaidi et al. (2018) and De Leon (2020) found that the macro-risk indicators such as GDP, inflation rate. Interest rates have a significant correlation with earning or profitability. Duraj & Moci (2015) supported this finding that stated the macro-risk factors have a relationship with earning, especially ROE, NIM, and efficiency. Kusuma & Atahau (2019) and Kartikasary et al. (2020) found that sharia banking in Indonesia more efficient because of the macroeconomic condition and political stability. However, internal factors still dominance influence earning.

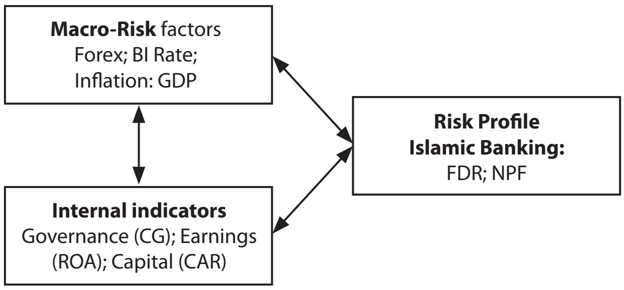
Hugonnier & Morellec (2017) and Santosa (2011) explained that macroeconomic factors significantly influence sharia bank capital, especially the capital adequacy ratio. Forex is negatively correlated with CAR, while BI rate and inflation are positively related to banks' capital. Moreover, Firmansyah (2014)found also that the capital of banks correlated to external factors dynamics. Moreover, Jacoub et al. (2020) and Al-Homaidi et al. (2018) found that non-performing financing correlated to capital, assets, management, earnings, and liabilities, especially financing deposit ratio, corporate governance index, earning, and capital of Islamic bank. These findings support by some previous studies such as Mukhibad et al. (2020), Abbas et al. (2019, and Yehorycheva et al. (2017).

The internal factors and macro-risk information are the critical roles played in Islamic banking's risk profile level yet well documented. The research gap in this area, especially in an emerging market, is GEC's correlation, macro-risk factors and risk profile, and differences in regulation and enforcement regime to sharia finance. The high-risk Islamic banking profile indicates the relationship of account attitudes, financial statement attitudes, business activity attitudes, customer attitudes, and macro-risk attitudes, including the role of debtors, creditors, and other parties involved. Therefore, the correlation of risk profile, forex, inflation, and economic growth rates to the GEC variable (GCG, earnings, and capital) in Islamic banks is the primary identification problem examined in this study with the 2011-2018 financial reporting period.

Methods

This research-based on quantitative data with sources that used in the analysis of this study covering the period 2011-2018, which that considered to be quite representative for correlation analysis and comparative studies: First, quarterly financial statements (statement of financial position/balance sheet, income statement, a summary of the finance period: 2011-2018. Second, financial statistics Indonesia and Central Bureau of Statistics (BPS): GDP, Inflation, Exchange Rate (forex IDR-USD) 2011-2018. Third, the sample used is the top ten Islamic banks, namely: Bank of Sharia Mandiri, Bank of BNI Sharia, Bank of BCA Sharia, Bank of Bukopin Sharia, Bank of Muamalat Indonesia, Bank of Mega Sharia, Bank of Victoria Sharia, Bank of Panin Sharia, Bank of Maybank Sharia, and Bank of BRI Sharia.

Figure 2. Method of correlation analysis



This research uses appropriate, relevant methods to explain statistical predictions' accuracy to test research hypotheses. Literature studies and previous studies have revealed that the accuracy of model predictions determine by selecting variables and the validity of this study. The statistical method uses to determine the correlation between variables and how strong one variable affects the other variables. This test is needed to test the significance of the influence of these variables too. This research using Kolmogorov Smirnov to test the data normality. Furthermore, to test whether there is a correlation between macro-risk factors, internal factors, and risk profile of Islamic banking using the Spearman rank correlation coefficient (if the data is not normally distributed) or Pearson Product Moment correlation (data normally distribute). The framework of analysis describes in Figure 2.

The variables n this study is describing in Table 1. This study used the Pearson product-moment coefficient of correlation between Macro-Risk, GEC, and risk profiles such as FDR and NFP, which follows the following stage: First, collecting secondary data of sharia banking quarterly financial statement and macroeconomics factors. Second, calculating the ratio of all internal variables and risk profile. Third, test the normality of all variables to decide the parametric or non-parametric analysis. Fourth, analyzing the relationship between three main factors, namely Macro-risk, internal indicators, and risk profile. Fifth, testing of the Kolmogorov Smirnov test was used to determine the method of parametric analysis (normally distributed) and non-parametric (not normally distributed). Sixth, the Pearson test uses correlation analysis between the three factors variables to find how strong the

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relationship between variables (Pearson product-moment coefficient of correlation). Seventh, summarizing the findings of the statistical analysis and discussion.

Tabel 1. Variables description

Variable	Measurement	Unit	Scale
Macro-risk:			
Exchange rate	Ln of JISDOR (IDR-USD)	IDR	Interval
BI rate	BI-7 day Reverse Repo	Percent	Ratio
Inflation rate	CPI Inflation rate	Percent	Ratio
GDP	GDP growth	Percent	Ratio
Internal:			
Corporate governance	GCG component matrix (1-5)	Rating	Ordinal
Earning	Net income to total assets	-	Ratio
Capital	Paid-in-capital to risk weighted assets	-	Ratio
Risk profile:			
Financing-deposit ratio	Total Financing to deposit ratio	-	Ratio
Non-performing financing	Non-performing financing to total financing	-	Percent

Result and Discussion

Normality testing aims to test whether the residual variable correlation model has a normal distribution. If the test results are typical, the correlation analysis uses the Pearson correlation method, and if the data is declared abnormal, then Rank Spearman correlation analysis will be used. Normality testing of all external and internal factors including macro-risk variables, namely: IDR-USD exchange rate (Forex); Reference interest rate (BI Rate); Inflation and Economic Growth Rate (GDP Growth). In contrast, internal factors include several variables such as risk profile, corporate governance, earnings, and capital (notated NPF; FDR; GC; ROA; BOPO, and CAR). The normality test results using the Kolmogorov-Smirnov One-Sample Test provide the results, as shown in Table 2.

Table 2. Normality testing of research variables

One-Sample Kolmogorov-Smirnov Test				
		Unstandardized Residual	**Unstandardized Residual**	**Unstandardized Residual**
N		**8**	**8**	**8**
Normal Parameters [a, b]	Mean	.00 million	.00 million	.00 million
	Std. Deviation	.12309399	.03481740	.11846032
Most Extreme Differences	Absolute	.260	.114	.197
	Positive	.260	.098	.197
	Negative	-.194	-.114	-.128
Test Statistic		.260	.114	.197
Asymp. Sig. (2-tailed)		.20 [c]	.200 [c, d]	.200 [c, d]

Source: Data processed

Table 2 presents the significance value of 0.120 for model 1, which shows that the data is normally distributed by 0.120> 0.05. The significance value in model 2 obtains of 0.200, so the data is normally distributed. Then for model 3, the significance value is 0.200, which indicates that the data is normally distributed. Thus, all the data tested shows a significance value above 0.05, which means it shows a normal distribution so that the correlation analysis can use the Pearson correlation.

The correlation between macro-risk and risk profile

Pearson correlation analysis shows that almost all correlations between proxy risk profiles and macro risk are significant, except inflation with NPF. Correlation between financing to deposit ratio (FDR) with Forex (USD-IDR) shows the correlation -0.641 and significant at α=5%. While the Forex correlation with Non-Performing Financing (NPF) presents different results that positively correlated with the value of 0.675, this analysis shows that the Forex correlation with FDR and NPF is inversely proportional both are a proxy of risk profiles, as shown in Table 3. Forex negatively correlates with FDR, because if the value of forex increases, the public's interest to buy USD will increase so that there will be a withdrawal of funds from Islamic banking (Santoso et al., 2019; Khemraj & Pasha, 2009). Whereas, the Forex correlation with NPF is positive because the increase in the IDR-USD exchange rate will increase business risk and investment risk so that the debtor will have difficulty paying the loan installments, which causes an increase in NPF (Al-Homaidi et al., 2018).

Table 3. Macro-risk and Risk profile correlation

	Risk Profile			
Macro-Risk	**FDR**	**Results**	**NPF**	**Results**
Forex	-0.641	significant	0.758	significant
BI Rate	0.361	significant	0.035	significant
Inflation	0.518	significant	-0.203	not significant
GDP growth	0.064	significant	0.048	significant

Source: Data processed

The analysis of the correlation of the BI Rate benchmark interest with the proxy risk profile also shows the opposite correlation in which the BI Rate correlation with FDR shows 0.361 and is significant while the BI Rate correlation with NPF is 0.035 and significant. These findings indicate that the correlation BI Rate by FDR and NPF equally positive but the magnitude of the correlation coefficient is different where FDR with BI rate is more reliable than the correlation NPF with the BI rate, though both are a proxy of risk profile as shown in Table 3. This result is due to the increase in The BI rate will increase the risk of default, which is getting higher so that the FDR and NPF will increase (Klein, 2013; Asnaini, 2014).

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The other finding presents that the correlation between inflation and risk profile is the opposite result. As well as the correlation of Inflation with FDR is positive with a value of 0.518. However, the different results show by the negative and not significant relationship between NPF and FDR. When inflation rises and below 10% will increase FDR because economic growth is also improving under the research of (Setiawan & Monita, 2013). Furthermore, the correlation between economic growth and proxy GDP growth shows a harmonious and significant result in which GDP growth with FDR positively correlates with a value of 0.627. The correlation with NPF is also significantly positive, with a significant coefficient of 0.923. Economic growth will trigger the growth of Islamic bank financing so that FDR increases, and increasing financing will also increase the risk of default, so NPF rises (Al-Homaidi et al., 2019; Donath et al., 2014).

The correlation between macro-risk and corporate governance

The backbone of corporate governance is agency theory correlated to external factors like macroeconomic risk such as foreign exchange, interest rate, inflation rate, and economic growth. It is one of the main theories to figure corporate governance (Pratiwi, 2016; Ikram et al., 2016; Warrad & Khaddam, 2020). The correlation between macro-risk and corporate governance is in line with the hypothesis, except the relationship between forex and GCG. The macro-risk such as BI rate, inflation, and GDP growth is significant with coefficient 0.036, -0.247, and -0.932, respectively (see Table 4).

Table 4. Macro-risk and Governance correlation

RGEC	Corporate Governance	
Macro-Risk	**GCG**	**Results**
Forex	0.795	not significant
BI Rate	0.036	significant
Inflation	-0.247	significant
GDP Growth	-0.932	significant

Source: Data processed

These findings could mean: macroeconomic stability, especially BI rate and economic growth, has been changed by public governance reforms, which spilled over to the corporate governance area. Some references call this the statutory reform effect (Mukhibad et al., 2020). Second, macroeconomic stability positively affects banks' investment in corporate governance quality that calls the voluntary reform effect. These findings substantiated the following areas: (i) the effectiveness of OJK and Bank of Indonesia as regulatory authorities; (ii) Islamic banking disclosure, compliance, and transparency rules; and (iii) the quality of the controlling and enforcement (Ugur & Ararat, 2006; Warrad & Khaddam, 2020 and Mukhibad et al., 2020).

The correlation between macro-risk and earnings

Table 5 presents the correlation between earning or profitability to Macro-risk aspects. The correlation between Forex or IDR-USD exchange rate with return on assets (ROA) shows a significant result of -0.681. While efficiency has a correlation of 0.780 and significant, the IDR's declining value will reduce purchasing power and thus harm the country's investment and economy. The decline in the exchange rate will reduce the financing of Islamic banking, which ultimately harms its earnings (Duraj & Moci, 2015; Setiawan & Monita, 2013).

The correlation between the BI rate as the benchmark interest rate and Earning shows a positive and significant result where the BI rate with ROA is 0.041, and the correlation of the BI rate with efficiency (operating expense to operating revenue) is 0.028. This finding shows that an increase in the BI rate will increase the ROA and efficiency of Islamic banking due to increased profit sharing.

Table 5. Macro-risk and Earnings correlation

RGEC	Earning			
Macro-Risk	**ROA**	**Results**	**Efficiency**	**Results**
Forex	-0.681	significant	0.780	not significant
BI Rate	0.041	significant	0.028	significant
Inflation	0.231	significant	- 0.154	not significant
GDP Growth	0.883	significant	- 0,840	significant

Source: Data processed

Furthermore, the correlation between the inflation rate and ROA shows a significant value of 0.231, but the correlation between inflation and efficiency is precisely the opposite of -0.154, but not significant. This result is supported by (Apriadi et al., 2016). The correlation between economic growth (GDP growth) shows that the higher GDP growth, the higher the ROA will be with a high coefficient of 0.883. Likewise, the correlation between economic growth and efficiency find to be the opposite in which the increase in GDP would reduce the efficiency with the coefficient of -0.840 that is in-line the previous findings (Mukhibad et al., 2020; Umiyati & Faly, 2015; Setiawan & Monita, 2013).

The correlation between macro-risk and capital

Correlation analysis between Macro-risk and Capital aspects represented by the Capital Adequacy Ratio (CAR) show in Table 6, where forex has a positive correlation with the CAR value with a correlation coefficient of 0.490. The increase in the IDR exchange rate indicates a strengthening of the economy and national competitiveness, opening opportunities for capital strengthening (Umiyati & Faly, 2015; Hugonnier & Morellec, 2017). While the correlation between the benchmark interest rate or BI rate

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by CAR shows insignificantly - 0.451, then the BI rate increase will reduce the Islamic banking capital.

Moreover, the correlation analysis results between Inflation and CAR are similar to the BI rate-CAR correlation, which is a negative correlation with a value of -0.465. This result is because an increase in inflation will trigger a rise in the BI rate, negatively impacting CAR. The correlation between GDP growths with CAR is in line with the correlation of the BI rate-CAR and CAR-Inflation, which is negative and significant at the amount of -0.306 due to an increase in financing optimizes reducing CAR. These findings are in-line with some previous studies (Ikram et al., 2016; Hugonnier & Morellec, 2017; Firmansyah, 2014).

Table 6. Macro-risk and capital correlation

RGEC	Capital	
Macro-Risk	**CAR**	**Results**
Forex	0.490	significant
BI Rate	-0.451	significant
Inflation	-0.465	significant
GDP Growth	-0,306	significant

Source: Data processed

The increasing exchange rate (IDR-USD) indicates a strengthening of the economy and national competitiveness, opening opportunities for capital strengthening (Mukhibad et al., 2020). While the correlation between the reference interest rate or the BI rate with CAR shows the results of a negative relationship, then the increase in the BI rate will reduce the Islamic banking capital (Al-Homaidi et al., 2019). Furthermore, the correlation analysis results between Inflation and CAR are similar to the BI rate-CAR correlation, which is a negative correlation. An increase in inflation will trigger a rise in the BI rate, which negative effect on CAR.

The correlation between RGEC and non-performing financing

Correlation analysis between Risk Profile (FDR), Governance (Governance), Earning and Efficiency (ROA and efficiency), and Capital (CAR) with Unhealthy Financing (NPF) shows in Table 7. The first correlation between FDR with a positive NPF is 0.638, where an increase in FDR will increase the NPF due to an increase in the amount of financing that can increase the risk default risk. The correlation between NPF and GCG shows a positive relationship where an increase in NPF will improve the quality of GCG implementation by Islamic banking management, where this finding is following (Firmansyah, 2014). Thus increasing NPF will trigger better governance efforts to avoid a higher risk of NPF.

Table 7. RGEC and Non-performing Financing correlation

RGEC	Risk Profile		Governance	Earning		Capital
	FDR	NPF	GCG	ROA	Efficiency	CAR
NPF Results	0. 638 Sig 0.10	1	0. 899 Sig 0.05	-0.988 Sig 0.01	0.634 Sig 0.10	0.169 not significant

Source: Data processed

Furthermore, the correlation between NPF and ROA produces a negative relationship of -0.988 so that an increase in NPF will reduce the profitability of Islamic banking. In contrast, the correlation of NPF with efficiency is positive 0.634, where an increase in NPF will increase efficiency, while the correlation of CAR with Capital in this case CAR is insignificant that in-line with some previous studies (Muthamimah, 2014; Hugonnier & Morellec, 2017; Jumono et al., 2020; Mukhibad et al., 2020). Analysis of the relationship between FDR and NPF is positive, where an increase in FDR will increase the NPF due to an increase in the amount of financing that can increase the risk of default (Santosa, 2011). The correlation between NPF and GCG shows a positive relationship where an increase in NPF will improve the quality of GCG implementation by Islamic banking management. Thus increasing NPF will trigger better governance efforts to avoid a higher risk of NPF. Furthermore, the correlation between NPF and ROA results in a negative relationship so that an increase in NPF will reduce the profitability of Islamic banking (Santoso et al., 2019). At the same time, NPF correlation with ROA is positive and will improve efficiency (Santosa, 2011; Alshammari, 2017; Dahir et al., 2019).

Conclusion

The Macro-risk and risk profile analysis find that the exchange rate or forex has a negative correlation with FDR and conversely has a positive correlation with NPF. This result is following the theory where the correlation between FDR and NPF is negative. The higher USD exchange rate can increase the NPF value due to the higher potential for bad credit. The BI Rate with the risk profile of FDR and NPF has a positive correlation, but the BI Rate correlation with FDR is much stronger than the correlation of the BI Rate with NPF. So, in general, the increase in the BI Rate can trigger a decline in the health of Islamic banking. Next, the inflation rate is positively correlated with FDR but does not correlate with NPF. Furthermore, both FDR and NPF's correlation between economic growth and risk profile is relatively high and positively significant. Thus economic growth can trigger a decline in the level of health of Islamic banks.

Correlation between Corporate Governance (GCG) and Macro-Risk shows different results where there are some insignificant correlations, namely Forex and Inflation. The correlation between Forex and GCG is not significant. It shows that Forex and GCG relations have no meaning. Then GCG has exhibited a significant correlation with the BI Rate with positive coefficients were small. It means that every increase in the BI rate would respond with the increasing value of GCG as an increased awareness of Islamic banking.

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At the same time, GCG also finds it to be negatively correlated with inflation so that with increasing inflation, the governance of Islamic banking loosened. While the correlation of economic growth to GCG is negative and significantly and presents that good economic growth will reduce the quality of corporate governance in sharia banking.

Analysis macro-risk and earnings find that the correlation between the exchange rate and return on assets (ROA) is negative and significant. While with efficiency (OCOI), the correlation was significantly positive. The declining value of the IDR will reduce purchasing power and thus hurt its investment and economy. The decline in the exchange rate will reduce the financing of Islamic banking, which ultimately harms profit. The correlation between the BI rate as the benchmark interest rate and ROA shows positive results, and the correlation between the BI rate and efficiency is also positive. This finding shows that an increase in the BI rate will increase the ROA and efficiency of Islamic banking due to increased profit sharing.

Furthermore, the correlation between the inflation with the ROA shows the value of a positive but inflation correlation with efficiency insignificantly. The correlation between economic growth (GDP growth) shows that the higher GDP growth, the higher the ROA will be with a high coefficient. Similarly, the correlation between economic growth and efficiency is the opposite, where increasing GDP will reduce efficiency so that Islamic banking efficiency decreases.

The managerial implication for Islamic banking management should be concerned, especially about macroeconomic indicators, risk management, and the correlation of internal factors and risk profile. The procedures of financed risk management have to be appropriate. To obtain a reasonable risk profile management process, the bank needs to establish corporate governance and reasonable financed risk criteria, appropriate authority personal, and risk appetite of Islamic banking. Credit risk management policies also couple with economic indicators and internal factors such as governance, earning, and capital. Besides, the growth of credit, high-risk lending, and consumption need to monitor to ensure sharia compliance during each period regularly.

This study's limitation is only the use of correlation analysis and secondary data from the financial statements of firms and regulators such as the Bank of Indonesia, and BPS (Central body of Statistic) that are published, quarterly. Future research suggests using the regression model, panel analysis and/or GMM with adding period for completing this study. The primary data from interviews and questionnaires for practitioners and experts are using for finding verification.

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How Efficient are Islamic Banks in Indonesia, Saudi Arabia, and the United Kingdom?

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Abstract. *This research aims to analyze the efficiency level of 13 Islamic Banks in Indonesia, Saudi Arabia, and the United Kingdom from 2015 to 2019. The calculation of the efficiency level in this study is relative, not absolute. This study uses the Data Envelopment Analysis (DEA) method and source data from Bankscope and Bank Focus. This research consists of 3 input variables that are Total of Assets (X1), Staff Expenses (X2) and Total Deposit (X3), and 2 Output that is Income (Y1) and Loan (Y2). This research finds that the overall efficiency level of 13 Islamic banks in Indonesia, Saudi Arabia, and the United Kingdom are fluctuating. According to the result, the Islamic banks in Saudi Arabia is more efficient than in Indonesia and the United Kingdom. There are some inefficient variables—the solution for this inefficiency problem achieve by employing managerial simulation generated by DEA. This study implies that Islamic banks should reduce wasteful variables and optimize the variables that improve the efficiency.*

Keywords: *Islamic bank, efficiency, stability, data envelopment analysis (DEA)*
JEL Classification: C1, F30, G20, G21

Abstrak. *Penelitian ini bertujuan untuk menganalisis tingkat efisiensi 13 Bank Syariah di Indonesia, Arab Saudi, dan Inggris dari 2015 hingga 2019. Perhitungan tingkat efisiensi dalam penelitian ini adalah relatif, tidak absolut. Penelitian ini menggunakan metode Data Envelopment Analysis (DEA) dan sumber data dari website Bankscope dan Bankfocus. Penelitian ini terdiri dari 3 variabel input yaitu Total Aset (X1) Biaya Staf (X2) dan Total Deposit (X3); dan 2 Output adalah Pendapatan (Y1) dan Pinjaman (Y2). Penelitian ini menemukan bahwa tingkat efisiensi bank syariah secara keseluruhan di Indonesia, Arab Saudi, dan Inggris berfluktuasi. Berdasarkan hasilnya, secara keseluruhan bank syariah di Arab Saudi lebih efisien daripada di Indonesia dan Inggris. Ada beberapa variabel yang tidak efisien. Solusi untuk masalah inefisiensi ini dapat dicapai dengan menggunakan simulasi manajerial yang dihasilkan oleh DEA. Hasil dari penelitian ini bisa dijadikan acuan di tahun berikutnya bagi bank syariah untuk mengurangi variabel yang boros dan mengoptimalkan yang masih kurang untuk meningkatkan efisiensi.*

Kata Kunci: *bank syariah, efisiensi, stabilitas, analisis data envelopment (DEA)*

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Introduction

Many banking transformations have taken place from the start of standard human resource operations worldwide in recent years. This transformation has made a significant contribution to the performance of banks in the world. A functioning and healthy credit is not only crucial for the process of improving the economy of various markets but also can improve efficiency and operations, and can increase economic growth. Conversely, unhealthy banking will experience financial difficulties. Therefore, research into the factors that determine banking performance has attracted academic researchers and banking improvement.

According to Farrell (1957), to measure a bank's performance can be seen from the efficiency level, the company's efficiency consists of two components: technical efficiency and allocative efficiency. Although the conventional financial system still dominates worldwide, the Islamic banking system is quite interesting to researchers and banking practitioners' attention, and this evidence by the Islamic Banks that survived the crisis. Many countries (for example, the United Kingdom) have adopted the Islamic banking model because inherent characteristics are seen through real and transparent economic transactions free of interest, uncertainty, and gambling, and supported by assets (Belouafi & Chachi, 2014). Since the 2007-2009 financial crisis, many banking institutions have gone bankrupt, and many regulatory reforms are enacted. The 2008 subprime mortgage crisis found potential weaknesses of the conventional banking system and appeared to reveal Islamic banks (Mollah & Zaman, 2015).

When the 2008 global crisis, many financial institutions that collapsed, even financial institutions as big as Lehman Brothers, who were more than 100 years old, were not saved. However, it turns out that Islamic financial institutions can survive and even continue to grow amid the crisis, which is one reason why investment transactions in the Islamic financial system base on clear and real assets. Fourth, Islamic banks are free from the negative spread, which is the negative difference between deposit interest and loan interest. In other words, the interest that must be paid by the Bank to deposit customers is far greater than the interest on loans. This condition contributed to the banking sector is stuck in 1998. On the other hand, Islamic banks that are more profit-oriented are certainly free from the negative spread.

However, it does not mean that Islamic banking is without risk, if management does not work well, then there is a possibility that problems can occur. If there is a mismanaged Islamic bank, it will damage the public's view of the image of Islamic banking, the plan to develop Islamic banking can also disrupt, and its impact can worsen the world economy, this is where the need for research on factors that affect the overall performance of Islamic banking in the world.

In a study conducted by Sufian & Kamarudin (2015), examining Technical Efficiency (TE), Pure Technical Efficiency (PTE), and Scale Efficiency (SE) of domestic Islamic banks in Southeast Asia, namely Malaysia, Indonesia, and Brunei, compared to Foreign Islamic Banks from the Middle East in period 2006-2014. The study found that domestic Islamic

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banks are more efficient than foreign Islamic banks with a significance level of 1% and 5%. Overall domestic and foreign Islamic banks are less efficient in terms of operational costs, compliance with Islamic law, and double taxation to reduce Islamic banks' efficiency. (Detail shows in Table 1).

Table 1. Efficiency Score of Domestic Islamic Banks and Foreign Islamic Banks

No	Domestic Islamic Bank	TE	PTE	SE	No.	Foreign Islamic Bank	TE	PTE	SE
1	Affin Islamic Bank Berhad	0.752	0.762	0.986	1	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad	0.630	0.712	0.833
2	Alliance Islamic Bank Berhad	0.965	1.000	0.965	2	Asian Finance Bank Berhad	0.487	0.750	0.668
3	AmIslamic Bank Berhad	0.949	0.978	0.970	3	HSBC Amanah Malaysia Berhad	0.838	0.901	0.932
4	Bank Islam Brunei Darussalam Berhad	0.478	0.528	0.904	4	Kuwait Finance House (Malaysia) Berhad	0.770	0.876	0.872
5	Bank Islam Malaysia Berhad	0.897	0.974	0.909	5	OCBC Al-Amin Bank Berhad	0.921	0.945	0.975
6	Bank Muamalat Malaysia Berhad	0.792	0.856	0.918	6	Standard Chartered Saadiq Berhad	0.722	0.905	0.814
7	CIMB Islamic Bank Berhad	0.899	0.950	0.947					
8	EONCAP Islamic Bank Berhad	0.831	0.892	0.928					
9	Hong Leong Islamic Bank Berhad	1.000	1.000	1.000					
10	Maybank Islamic Berhad	1.000	1.000	1.000					
11	PT Bank of BRI Sharia	0.652	0.805	0.815					
12	PT BJB Sharia	1.000	1.000	1.000					
13	PT Maybank Sharia Indonesia	0.938	1.000	0.938					
14	PT Bank of Mega Sharia	0.860	1.000	0.860					
15	PT Bank of Muamalat Indonesia Tbk	0.775	0.898	0.854					
16	PT Bank of Panin Sharia	0.766	0.886	0.876					
17	PT Bank of BNI Sharia	0.757	0.875	0.846					
18	PT Bank of Sharia Bukopin	0.689	0.867	0.789					
19	PT Bank of Sharia Mandiri	0.728	0.945	0.764					
20	PT Bank of Victoria Sharia	1.000	1.000	1.000					
21	PT BCA Sharia	0.598	0.914	0.678					
22	Public Islamic Bank Berhad	0.860	0.870	0.988					
23	RHB Islamic Bank Berhad	0.864	0.927	0.934					
	AVERAGE	**0.828**	**0.905**	**0.910**		**AVERAGE**	**0.716**	**0.840**	**0.842**

Islamic banking is still considered less competitive with conventional banking in terms of efficiency. In 2010-2012, Conventional Commercial Banks' efficiency reached 98.43%, while Islamic banks' efficiency only reached 82.1% (Wahab, 2015). According to Hidayat (2014), one of Islamic banking's operational efficiency determines a very high cost and initial investment. This condition affects the low profits distributed to depositors. Besides, Islamic Bank financing equivalent rates are relatively higher than conventional bank loans. This condition can lead to decreased interest in financing customers in Islamic Banks (Syafrida & Aminah, 2015).

An increasing Amount (US Dollar) of literatures observed evaluating Islamic banks' efficiency by adopting different methods, such as profit efficiency, output efficiency, and cost-efficiency. There are mainly two components of efficiency analysis, i.e., technical efficiency and allocative efficiency, where the former maximize output with a given level of input, and the latter minimizes input for achieving a given level of output. The existing literature in efficiency analysis can divide into a few categories that measure the efficiency of merely Islamic banks or conventional banks by focusing on single or multiple countries (Hassan et al., 2018).

Based on previous research in Table 2, almost discuss Islamic banking's efficiency is still only in areas with the same characteristics. On a global scale, it is essential to compare wider regions. The difference between this study and previous research in the area of coverage is that this study compares three countries with different regions and characters: Indonesia, United Kingdom, and Saudi Arabia. The study's selection in the study was because these three countries list in the Top Islamic Global Financial Report (2019). The selection of Islamic banks in this study is based on banks that already have a reputation in the country and banks whose majority ownership is owned by the state.

Islamic banks in Indonesia have the character of using a dual banking system. In 2019, Indonesia became the top-ranking country in the 2019 Islamic Financial Country Index. The factors that led to its rise to the top were high-level political support from President Joko Widodo himself, who led the Sharia National Economic and Financial Committee (KNEKS) to promote Islamic finance in this country. Indonesia is also the largest economy with the largest GDP in the Organization of the Islamic Conference and the country with the largest Muslim population in the world. The development of regulations is also beneficial for this country with the collaboration between the Financial Services Authority and Bank Indonesia.

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Table 2. Recent Studies About the Efficiency of Islamic Banks

Studies	Sample Countiers	Research Method
Non-Comparative studies-Islamic Banks		
Noor & Ahmad (2012)	25 countries	DEA
Zainal & Ismail (2012)	Malaysia	DEA
Akhtar & Sadaqat (2011)	Pakistan	DEA
Non-Comparative studies-Conventional		
Ajlouni & Hmedat (2011)	Jordan	DEA
AlKhathlan & Malik (2010)	Saudi Arabia	DEA
Almazari & Almumani, (2012)	Saudi Arabia	Regression, ANOVA
Al-Jarrah (2007)	Jordan, Egypt, Saudi Arabia and Bahrain	DEA
Comparative studies-Islamic banks and conventional banks-Mixed Results		
Sillah & Harrathi (2015)	GCC Countries	DEA
Islamic banks are more efficient than conventional banks		
Ferhi & Chkoundali (2015)	MENA	SFA & DEA
Al-Muharrami (2008)	GCC; Saudi Arabia, UAE, Kuwait, Qatar, Oman, Bahrain	DEA
Johnes et al. (2013)	Bahrain, Bangladesh, Yamen, Bahrain, UAE, Turkey, Egypt, Sudan, Palestine, Indonesia, Tunisia, Jordan, Saudi Arabia, Kuwait, Qatar, Malaysia, Pakistan	MFA, DEA
Local Islamic banks are more efficient than foreign Islamic banks		
Zainal & Ismail (2012)	Malaysia	DEA
Islamic banks are less efficient than conventional banks		
Srairi (2010)	GCC: Saudi Arabia, UAE, Kuwait, Qatar, Oman, Bahrain	SFA
Saeed et al. (2013)	Pakistan	DEA
Hassan (2006)	MENA and ASEAN	DEA
No significant difference between efficiency of Islamic and conventional banks		
Bader et al. (2008)	Africa; Algeria, Tunisia, Senegal, Gambia and Sudan. Asia: Malaysia, Indonesia. Middle East: UAE, Bahrain, Kuwait, Lebanon, Iran, Jordan, Turkey, Saudi Arabia and, Yemen	DEA
Abdelkader & Salem (2013)	MENA countries	DEA
Hassan et al. (2018)	Saudi Arabia	DEA
Rozzani & Rahman (2013)	Malaysia	SFA
Comparing efficiency at full-fledged Islamic banks and Islamic branches of conventional banks		
Mokhtar et al. (2008)	Malaysia	DEA
Siddique & Rahim (2013)	Pakistan	DEA
Kamaruddin et al. (2008)	Malaysia	DEA

Studies	Sample Countiers	Research Method
	Studies measuring efficiency of Islamic banks only	
Bahrini (2017)	MENA	DEA
Rosman et al. (2014)	Bahrain, Yemen, Iraq, Iran, Lebanon,Philippine, Indonesia, Palestine, Malaysia, Jordan, Turkey, Kuwait, Sudan, Brunei Darussalam, Saudi Arabia, Pakistan, United Arab Emirates, Singapore, Syria and Qatar	DEA
Rahim et al. (2013)	MENA and Asian countries	DEA
Sufian (2009)	Sixteen countries: Bahrain; Bangladesh; Egypt; Pakistan; Saudi Arabia; Turkey; UAE; Gambia; Indonesia; Iran; Kuwait; Malaysia; Qatar; South Africa; Sudan; Yemen	DEA
Viverita et al. (2007)	Thirteen countries: Algeria; UAE; Yemen; Bahrain; Bangladesh; Brunei; Egypt; Indonesia; Jordan; Kuwait; Malaysia; Qatar; Sudan;	DEA
Yudistira (2004)	18 Islamic Banks from MENA and ASEAN Countries	DEA
Hassan (2005 & 2006)	Twenty one countries: Brunei; Egypt; Gambia; Algeria; Bahamas; Bahrain; Bangladesh; Indonesia; Iran; Jordan; Kuwait; Lebanon; Malaysia; Mauritania; Qatar; Saudi Arabia; Sudan; Tunisia; UAE; UK; Yemen	DEA

Source: Data processed by the author

Islamic banks in Saudi Arabia have the characteristics of a country system in the form of a kingdom. Saudi Arabia is one of the world's largest Islamic banking and financial markets. Saudi Arabia contributed significantly to Islamic financial assets totaling 1.6 trillion dollars. The Kingdom of Saudi Arabia is a member of the Gulf Cooperation Council, which has the most dominant economic conditions among the five other member countries, namely the United Arab Emirates, Qatar, Kuwait, Bahrain, and Oman. Saudi Arabia also received quite a lot of income apart from oil, namely from the Hajj and Umrah pilgrimage sector and the halal tourism sector, which was being developed to look for new income sources. Even so, Islamic banking is still control by a few people in Saudi Arabia. In 2019, Saudi Arabia was ranked 4th in the 2019 Islamic Financial Country Index.

The hallmark of Islamic banks in the UK is that although they are not Muslim-majority countries, the UK is the reference and center of Islamic world finance. The success and stability of the development of Islamic banks have attracted the attention of many parties. Several financial institutions in non-Muslim countries (such as United Kingdom, Luxembourg, and Switzerland) have also begun to accommodate the public and investors who want to carry out sharia financial transactions as long as they meet the requirements of the local financial authority. London's popularity as a center for Islamic finance emerged in 2013 when Prime Minister David Cameron announced plans to develop the British city as the financial capital of Western Islam. In 2019, the UK was ranked 17th in the Islamic Financial Country Index 2019.

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Therefore, it shows that previous research on efficiency measurement dominates by research with the same regional characteristics. This research tries to contribute this novelty by examining Islamic banks' efficiency in three countries with different regional characteristics but with the same Islamic bank category and size. Hence, the researcher seeks to compare Islamic banks' efficiency levels in Indonesia, Saudi Arabia, and the United Kingdom.

Methods

Farrell first introduced the Data Envelopment Analysis (DEA) in 1957 (Firdaus & Hosen, 2013). DEA is one of the analytical tools used to measure organizations' efficiency in profit-oriented and non-profit-oriented organizations where operations use several inputs to produce some outputs. The DEA technique makes efficient banking frontier sets and compares them with other inefficient banks. This technique does make scores or efficiency scores (Hidayat, 2014). Furthermore, the bank efficiency score limit between 0 and 1. The most efficient bank has a score of 1, while the bank with the most inefficient score is 0.

Some research has discussed Islamic banking's efficiency level, such as Firdaus & Hosen (2013) and Wahab (2015). Research with the DEA method is to use domestically and abroad, as Almumani (2013) examined the efficiency of Islamic banking in Saudi Arabia and research conducted by Salami & Adeyemi (2015) levelof Islamic banking in malaysia international bank.

According to Tanjung & Devi (2013), the DEA method uses two commonly used model approaches, namely the Charnes, Chooper, and Roodes (CCR) model developed in 1978 and the Banker, Charnes, and Cooper (BCC) model in 1984. The first is the model Charnes, Chooper, and Roodes (CCR) This model was developed in 1978. The DEA-CCR model is known as the Constant Return Scale (CRS) model because it assumes that the production process follows the CRS. The CRS assumption assumes that each increase in one input will increase one output. This assumption applies to business units that have been producing at their maximum capacity (optimum scale). Then there is the Banker, Charnes, and Cooper (BCC) model, and the second model developed in 1984. This model assumes the Variable Return Scale (VRS), which is the previous model's development. The VRS assumption is that if there is an increase in one input, it will not affect the output increase because it does not operate at its optimal scale.

The variables used for performance analysis by looking at efficiency are using input and output variables. The approach in this study is the intermediation approach. This approach views an institution as an intermediary, changing or transferring surplus units to deficit units. The model used in this study is the Constant Return to Scale (CRS). This study consists of 3 input variables: total assets, staff costs, and total deposits, and two outputs are revenue and loans. The main data source is secondary data obtained from Bankscope and Bank Focus, the data portal of bank financial statements worldwide with the same financial statement format and units equated in US dollars. This variable study's object includes 13 financial statements of Islamic Banks in Indonesia, Saudi Arabia, and the United Kingdom from 2015-2019. Measurement of efficiency with DEA is as follows (Rusydiana, 2013):

Maximize:

$$Z_k = \sum_{r=1}^{s} U_{rk} Y_{rk}$$

With limitations or constraints:

$$\sum_{i=1}^{s}(U_{rk}Y_{rk}) - \sum_{i=1}^{m}(V_{ik}X_{ij}) \leq 0\ ; j = 1, 2, 3, \dots, n$$

$$\sum_{i=1}^{m}(V_{ik}X_{ik}) = 1$$

$$U_{rk} \geq 0\ ; r = 1, 2, 3, \dots, s$$

$$V_{ik} \geq 0\ ; i = 1, 2, 3, \dots, m$$

yrk : total output r generated by Decision Making Unit (DMU) k

Xij : number of inputs i used subDMU j

Yrj : total output r generated by DMU j

Xik : number of inputs i used by DMU k

s : the number of DMU analyzed

m : number of inputs used

Urk : weighted weight of output r generated by each DMU k

Vik : the weighted weight of the input used for DMU k

Zk : optimal value as an indicator of the relative efficiency of subDMU k

DEA has several managerial values. First, DEA results in efficiency for each Decision-Making Unit (DMU), relative to the other DMUs in the sample. This efficiency figure allows an analyst to recognize the DMU most in need of attention and plan corrective actions for DMU, which is less efficient. Second, the DEA shows a number DMU which has excellent efficiency and a set of multipliers that can be used by the policymaker to devise an improvement strategy, so that a decision-maker policy not only recognizes inefficient DMUs but also knows how much inputs and outputs that must adjust in order to have high efficiency. Third, DEA provides a cross-efficiency matrix. The cross efficiency of DMU A to DMU B is the ratio of Weighted output divided by weighted input calculated using input levels and DMU A outputs and DMU B input and output weights. Cross efficiency analysis can help one policymaker recognize efficient DMUs but use a combination of inputs and resulting in a combination of outputs that are very different from other DMUs.

Result and Discussion

Based on the efficiency analysis results using the Data Envelopment Analysis (DEA) analysis tool, with the Warwick Win DEA software and Islamic bank financial statement data sources from bank scope and bank focus, each Islamic Bank's efficiency values are as shown in Figure 1.

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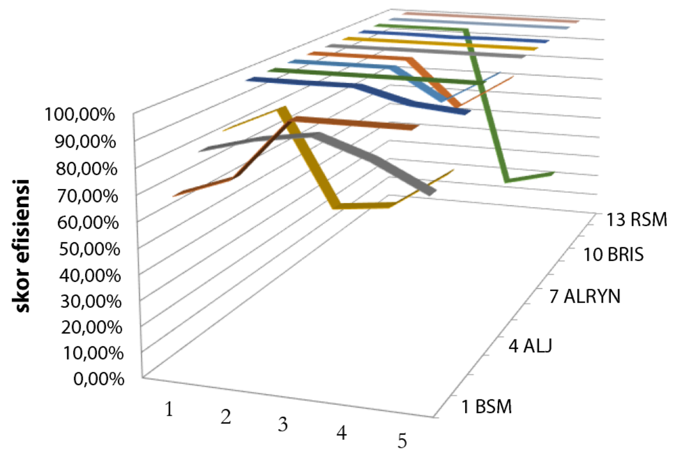
Figure 1. Results of the Efficiency Scores of Islamic Banks in Indonesia, Saudi Arabia, and the United Kingdom in 2015-2019 (1-5)



	1	2	3	4	5
1 BSM	68,88%	76,69%	100,00%	100,00%	100,00%
2 ALB	80,66%	86,36%	89,61%	82,27%	71,56%
3 BLME	84,06%	93,74%	57,03%	59,51%	74,26%
4 ALJ	100,00%	99,77%	100,00%	94,39%	92,38%
5 ALN	100,00%	100,00%	100,00%	100,00%	100,00%
6 ALR	100,00%	100,00%	100,00%	87,47%	100,00%
7 ALRYN	100,00%	100,00%	100,00%	80,76%	94,52%
8 BCAS	100,00%	100,00%	100,00%	100,00%	100,00%
9 BNIS	100,00%	100,00%	100,00%	100,00%	100,00%
10 BRIS	100,00%	100,00%	99,56%	100,00%	100,00%
11 GTH	100,00%	100,00%	100,00%	27,29%	32,85%
12 QIB	100,00%	100,00%	100,00%	100,00%	100,00%
13 RSM	100,00%	100,00%	100,00%	100,00%	100,00%

Source: Results of processing by Warwick win DEA

Based on Figure 1, the classification of efficiency categories in this study is divided into three parts: the Green, Amber, and Red categories. Green range is 100%, amber range is 90% -99.99% and range red is 0% - 89.99%. Understanding the Green classification is an Islamic bank in an efficient condition and must be maintained in the following year. The understanding of the Amber classification is an Islamic bank is approaching an efficient point. However, it might also be risky if the inefficiency problem, not addresses, and attention is needed. Understanding Red's classification is a risky Islamic bank because it is far from an efficient limit to achieve. Here, management action is immediately needed to improve inefficiency from calculating Islamic banks' efficiency in Indonesia, Saudi Arabia, and the United Kingdom as many as 13 Islamic banks in 2015-2019.

Data Envelopment Analysis can provide repair values for units that experience inefficiency, then banks that experience inefficiency can be calculated based on managerial simulations conducted by the DEA.

1. Gatehouse Islamic Bank United Kingdom

During the years from 2015-2019, the Gatehouse Syariah Bank UK's efficiency level reached 100% in 2015, 2016, and 2017 but experienced an inefficiency in 2018 of 27.29% due to inefficiencies in the fixed assets variable, staff expenses, and total deposits and loans. In 2019 the value was 32.85% inefficiencies occurred in fixed assets, staff expenses, and total deposits and income. The average efficiency is 72.028%. The efficiency improvement of the UK's 2019 Islamic gatehouse bank shows in Figure 2.

Table 3. Efficiency Scores and Improvement of Gatehouse Islamic Bank 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 100%	X1 Fixed Assets	14223	14223	0.0%	100%
	X2 Staff Expenses	5770	5770	0.0%	100%
	X3 Total Deposits	2760	2760	0.0%	100%
	Y1 Income	4079	4079	0.0%	100%
	Y2 Loans	95029	95029	0.0%	100%
2016: 100%	X1 Fixed Assets	13869	13869	0.0%	100%
	X2 Staff Expenses	6582	6582	0.0%	100%
	X3 Total Deposits	2637	2637	0.0%	100%
	Y1 Income	121	121	0.0%	100%
	Y2 Loans	91820	91820	0.0%	100%
2017: 100%	X1 Fixed Assets	13056	13056	0.0%	100%
	X2 Staff Expenses	5963	5963	0.0%	100%
	X3 Total Deposits	11514	11514	0.0%	100%
	Y1 Income	1573	1573	0.0%	100%
	Y2 Loans	56891	56891	0.0%	100%
2018: 27,29%	X1 Fixed Assets	13031	1494,5	88.5%	11.5%
	X2 Staff Expenses	5647	466,5	91.7%	8.3%
	X3 Total Deposits	58239	15893,7	72.7%	27.3%
	Y1 Income	374	374	0.0%	100.0%
	Y2 Loans	48564	52264,3	7.6%	92.9%
2019: 32,85%	X1 Fixed Assets	12915	2200	83.0%	17.0%
	X2 Staff Expenses	8252	743	91.0%	9.0%
	X3 Total Deposits	73334	24092,8	67.1%	32.9%
	Y1 Income	134	675	80.1%	19.9%
	Y2 Loans	87104	87104.1	0.0%	100.0%

Source: Data processed by Warwick Win DEA

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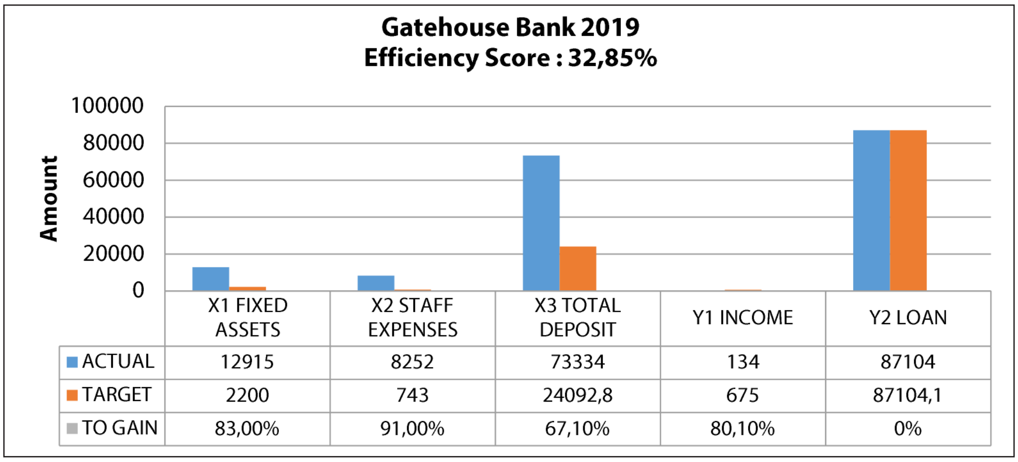
Based on Table 3. Gatehouse Bank PLC (Gatehouse) is an official bank in the UK, based in Mayfair, London. Founded in 2008, the bank operates according to Shariah principles and offers savings and financial products for commercial and residential real estate in the UK and seeks and advises UK real estate investors focusing on development for rent or lease in the private sector. The efficiency value obtained by the Gatehouse Islamic bank UK 2019 is 32.85 percent (see Figure 2). This result includes the red category, which means that Islamic banks are at risk because they are far from the efficient limit.

Figure 2. Improved Efficiency of UK Gatehouse Islamic Bank 2019



	X1 FIXED ASSETS	X2 STAFF EXPENSES	X3 TOTAL DEPOSIT	Y1 INCOME	Y2 LOAN
ACTUAL	12915	8252	73334	134	87104
TARGET	2200	743	24092,8	675	87104,1
TO GAIN	83,00%	91,00%	67,10%	80,10%	0%

Source: Data processed by Warwick Win DEA

Through a detailed calculation, the Gatehouse Bank UK experienced inefficient waste in fixed assets, staff expenses, and total deposits. It shows the difference in actual data that does not balance with the target data or its ideal form. Spending on fixed assets must be reduced by 83.0 percent, while expenses for staff expenses must reduce by 91.0 percent, and total deposits must reduce to 67.1 percent. Through the same weighting, Gatehouse Islamic Bank United Kingdom 2019, it should be able to get income 403.8 percent more than what happened, while in terms of Loans, it is following the actual Amount (US Dollar) and target. This insignificant result of Gatehouse bank United Kingdom is relevant to Öndeş (2019). Their study shows an insignificant result for the UK, including Gatehouse Bank, and significant in Turkey Islamic banks in asset quality and management quality.

2. Al-Bilad Islamic Bank Saudi Arabia

Based on Table 4, during five years from 2015-2019, the efficiency level of Islamic Bank A-Bilad Saudi Arabia has fluctuated, reaching 80.66% in 2015 due to inefficiencies in fixed assets, staff expenses, and total deposits, reaching 86.36% in 2016. variable, fixed assets, staff expenses, and total deposits, reaching 89.61% in 2017, there was an inefficiency on the fixed assets variable, staff expenses, and total deposits and income, reaching 82.27% in 2018 inefficiency on the fixed assets variable, staff expenses, and total deposits and income, and 71.56% in 2019 incurred inefficiencies on fixed assets, staff expenses, and total deposits variables. The average total efficiency is 82.092%.

Al Bilad Bank is a Saudi Islamic bank that establishes in 2004. The efficiency value obtained by Al-Bilad Islamic Bank of Saudi Arabia in 2019 based on DEA calculation shows 71.56 percent and includes in the Red category. This calculation means that Islamic banks are at risk because it is far from the efficient limit to achieve. With this condition, management action immediately needs to improve efficiency. In 2019 Saudi Arabia Al-Bilad Islamic Bank experienced inefficient waste in fixed assets, staff expenses, and total deposits through a detailed calculation. Spending on fixed assets must be reduced by 28.4 percent, while staff expenses must reduce to 28.4 percent, and total deposits must reduce to 28.4 percent.

Table 4. Efficiency Level of Al-Bilad Islamic Bank in Saudi Arabia 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015 : 80,66%	X1 Fixed Assets	792084	638880	19.3%	80.7%
	X2 Staff Expenses	853106	688100	19.3%	80.7%
	X3 Total Deposits	42179460	29859735.9	29.2%	70.8%
	Y1 Income	788423	788423	0.0%	100%
	Y2 Loans	42637280	42637280	0.0%	100%
2016 : 86,36%	X1 Fixed Assets	802424	693002,8	13.6%	86.4%
	X2 Staff Expenses	902222	779192	13.6%	86.4%
	X3 Total Deposits	40234715	34748174.6	13.6%	86.4%
	Y1 Income	809023	809023	0.0%	100.0%
	Y2 Loans	44129231	44129231	0.0%	100.0%
2017 : 89,61%	X1 Fixed Assets	875424	784447.3	10.4%	89.6%
	X2 Staff Expenses	953585	854485.6	10.4%	89.6%
	X3 Total Deposits	47782959	38459246.8	19.5%	80.5%
	Y1 Income	936167	994631.3	6.2%	94.1%
	Y2 Loans	51153811	51153811	0.0%	100.0%
2018 : 82,27%	X1 Fixed Assets	1146848	943648,4	17.7%	82.3%
	X2 Staff Expenses	1052360	866157	17.7%	82.3%
	X3 Total Deposits	57175594	47041667.1	17.7%	82.3%
	Y1 Income	612693	1379662.3	55.6%	44.4%
	Y2 Loans	58922399	58922399	0.0%	100.0%
2019 : 71,56%	X1 Fixed Assets	1866329	1335512	28.4%	71.6%
	X2 Staff Expenses	1146785	820619	28.4%	71.6%
	X3 Total Deposits	66797565	47799154,6	28.4%	71.6%
	Y1 Income	1243740	1243740	0%	100%
	Y2 Loans	63404287	63404287	0%	100%

Source: Data processed by Warwick Win DEA

Through the same weighting, Al-Bilad Saudi Arabia Islamic Bank 2019, in terms of income and Loans are following the actual Amount (US Dollar) and target. Miah &

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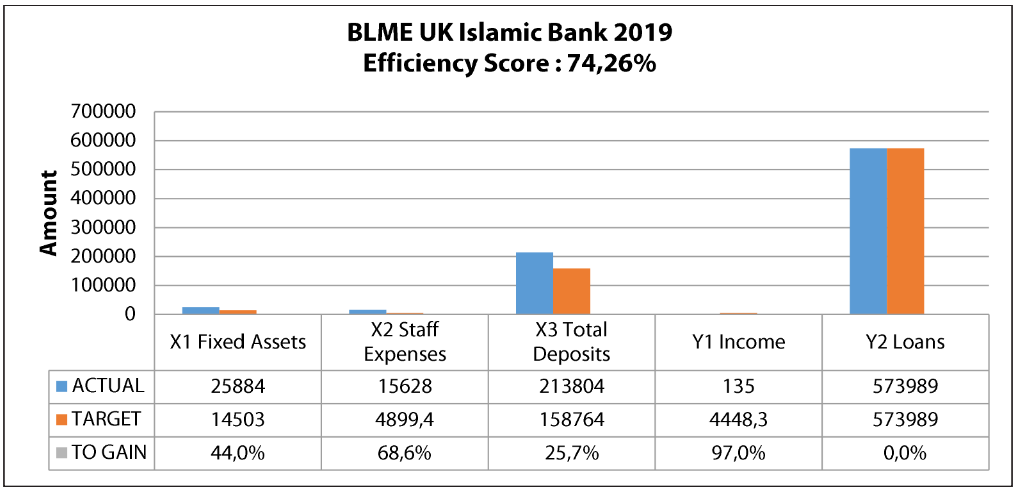
Uddin (2017), that study about the comparative study between Islamic and conventional banks efficiency in GCC, said that Al-Bilad Bank also have some inefficient results in recent years, but there is much room for Islamic banks to increase their productive efficiency, like from cost-efficiency. This finding supports earlier studies from Hassan et al. (2018) that try to measure Islamic banks' performance in Saudi Arabia. Bank Al-Bilad is found least efficient in decreasing costs by decreasing input for achieving a particular output level. The findings are consistent with Almumani (2013) that bank Al Bilad is relatively less efficient in technical efficiency.

3. BLME Islamic Bank United Kingdom

Based on Table 5, during five years from 2015-2019, the efficiency level of the UK BLME Islamic Bank has fluctuated. In 2015 the values reached 84.06% due to inefficiencies in fixed assets, staff expenses, total deposit, and income variables. The value was reaching 93.74% in 2016. There was an inefficiency in the fixed variable. assets, staff expenses, and total deposits. For 2017, the value is 57.03%, there were inefficiencies in fixed assets, staff expenses, total deposits, and income variables. In 2018, the calculation reaching 59.51%. There were inefficiencies in fixed assets, staff expenses, and total deposit and income. Finally, in 2019, the value reached 74.26% due to the fixed assets' inefficiencies, staff expenses, total deposit, and income variables. The average total efficiency was 73.72%. The efficiency improvement of the UK BLME Islamic bank 2019 shows in Figure 3.

Figure 3. Efficiency Improvements to the BLME UK Islamic bank 2019



	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	25884	15628	213804	135	573989
TARGET	14503	4899,4	158764	4448,3	573989
TO GAIN	44,0%	68,6%	25,7%	97,0%	0,0%

Source: Data processed by Warwick Win DEA

BLME (Bank of London and The Middle East Plc) is an independent wholesale Islamic bank independent from the UK and is the largest Islamic Bank in Europe. The efficiency value obtained by the UK BLME Islamic bank 2019 based on DEA calculation shows 74.26 percent and include in the Red category, which means that Islamic banks are at risk because it is far from the efficient limit to achieve. Here management action is immediately needed to improve inefficiency.

Table 5. Efficiency Levels of BLME UK Islamic Bank 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015 : 84,06%	X1 Fixed Assets	31842	26765.4	15.9%	84.1%
	X2 Staff Expenses	19226	16160.8	15.9%	84.1%
	X3 Total Deposits	263022	221088.5	15.9%	84.1%
	Y1 Income	111	8984.1	98.8%	1.2%
	Y2 Loans	706121	706121	0.0%	100%
2016 : 93,74%	X1 Fixed Assets	77651	35090,7	54.8%	45.2%
	X2 Staff Expenses	13405	12565.3	6.3%	93.7%
	X3 Total Deposits	308530	289204.2	6.3%	93.7%
	Y1 Income	4315	4315	0.0%	100.0%
	Y2 Loans	669284	669284	0.0%	100.0%
2017 : 57,03%	X1 Fixed Assets	52585	29988	43.0%	57.0%
	X2 Staff Expenses	16644	9293.7	44.2%	55.8%
	X3 Total Deposits	471444	268853.6	43.0%	57.0%
	Y1 Income	974	3451.1	254.3%	28.2%
	Y2 Loans	782204	782204	0.0%	100.0%
2018 : 59,51%	X1 Fixed Assets	41752	17988,3	56.9%	43.1%
	X2 Staff Expenses	16518	5614.6	66.0%	34.0%
	X3 Total Deposits	321473	191303.4	40.5%	59.5%
	Y1 Income	357	4501,6	92.1%	7.9%
	Y2 Loans	629074	629074	0.0%	100.0%
2019 : 74,26%	X1 Fixed Assets	25884	14503	44.0%	56.0%
	X2 Staff Expenses	15628	4899,4	68.6%	31.4%
	X3 Total Deposits	213804	158764	25.7%	74.3%
	Y1 Income	135	4448,3	97.0%	3.0%
	Y2 Loans	573989	573989	0.0%	100%

Source: Data processed by Warwick Win DEA

A detailed calculation shows that the 2018 BLME UK Syariah Bank experienced inefficient waste in fixed assets, staff expenses, and total deposits. Spending on fixed assets must be reduced by 44.0 percent, while staff expenses must reduce to 68.6 percent, and total deposits must reduce to 25.7 percent.

Through the same weighting of the UK BLME Islamic bank 2019 in terms of income, 3195.0 percent of the actual data must be added. This condition is because the UK BLME Islamic bank categorizes as just beginning to develop in the UK, while in terms of the loan, it is following the actual number and target. The efficiency value of BLME banks in the previous year from 2015-2019 was relatively quite efficient. This value is relevant because BLME became the Best Islamic Bank in Europe (2008) and Best Islamic Bank in the UK (2009, 2010, 2011, 2012, and 2013). This result is relevant to the study of Khan (2009)

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about the profitability of conventional and Islamic banks in the UK. The study finds that Islamic banks in the United Kingdom, including BLME Islamic Bank, are less geared, less liquid, but more efficient in terms of their capital than the Conventional banks and the Conventional banks are more stable than Islamic banks.

4. Al-Jazira Islamic Bank Saudi Arabia

Based on Table 6, during five years from 2015-2019, the overall efficiency level of Islamic Bank Al-Jazira has shown a good trend, reaching 100.00% in 2015, 99.77% in 2016 due to inefficiencies fixed assets, staff expenses, and total deposit variables. Back 100.00% efficient in 2017, down to 94.39% in 2018 due to inefficiencies in fixed assets, staff expenses, total deposit, and income variables, and 92.38% in 2019 due to inefficiencies fixed assets variable, staff expenses, and the total deposit. The average Amount (US Dollar) of efficiency is 97.30%. Improvements in the efficiency of Islamic Bank Al-Jazira Saudi Arabia 2019 shows in Figure 4.

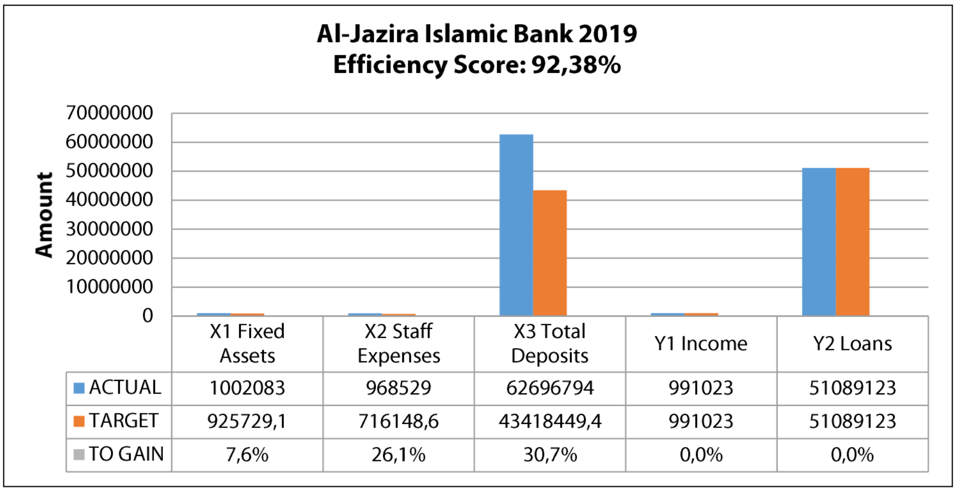
Table 6. Efficiency Levels of Al-Jazira Islamic Bank Saudi Arabia 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 100%	X1 Fixed Assets	679088	679088	0.0%	100.0%
	X2 Staff Expenses	908901	908901	0.0%	100.0%
	X3 Total Deposits	49673599	49673599	0.0%	100.0%
	Y1 Income	1287119	1287119	0.0%	100.0%
	Y2 Loans	46555011	46555011	0.0%	100.0%
2016 : 99,77%	X1 Fixed Assets	701659	700050.6	0.2%	99.8%
	X2 Staff Expenses	894313	892262.9	0.2%	99.8%
	X3 Total Deposits	51602354	49140929.7	4.8%	95.2%
	Y1 Income	871942	871942	0.0%	100.0%
	Y2 Loans	43436473	43436473	0.0%	100.0%
2017 : 100%	X1 Fixed Assets	640928	640928	0.0%	100.0%
	X2 Staff Expenses	856884	856884	0.0%	100.0%
	X3 Total Deposits	50278366	50278366	0.0%	100.0%
	Y1 Income	857514	857514	0.0%	100.0%
	Y2 Loans	40159095	40159095	0.0%	100.0%
2018 : 94,39%	X1 Fixed Assets	606973	572933,9	5.6%	94.4%
	X2 Staff Expenses	896716	846428,1	5.6%	94.4%
	X3 Total Deposits	51804098	25740688	50.0%	49.7%
	Y1 Income	378276	622809	64.6%	60.7%
	Y2 Loans	42194640	42194640	0.0%	100.0%
2019 : 92,38%	X1 Fixed Assets	1002083	925729.1	7.6%	92.4%
	X2 Staff Expenses	968529	716148.6	26.1%	73.9%
	X3 Total Deposits	62696794	43418449	30.7%	69.3%
	Y1 Income	991023	991023	0.0%	100.0%
	Y2 Loans	51089123	51089123	0.0%	100.0%

Source: Data processed by Warwick Win DEA

Bank Aljazira recognize as one of the leading fast-growing sharia financial institutions in Saudi Arabia, a Saudi-oriented and client-oriented Financial Group that provides individuals, businesses, and institutions with innovative financial services according to Sharia through the professional and dedicated staff. The efficiency value obtained by Al-Jazira Bank of Saudi Arabia in 2019 shows 92.38 percent and belongs to the Amber category, meaning that the Islamic Bank is approaching the point of efficiency. However, it may also be risky if inefficiency problems, not addresses, and attention are needed.

Figure 4. Efficiency Improvement of Al-Jazira Islamic Bank of Saudi Arabia 2019



	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	1002083	968529	62696794	991023	51089123
TARGET	925729,1	716148,6	43418449,4	991023	51089123
TO GAIN	7,6%	26,1%	30,7%	0,0%	0,0%

Source: Data processed by Warwick Win DEA

5. Al Rayan Islamic Bank United Kingdom

Based on Table 7, during five years from 2015-2019, Al-Rayan Islamic Bank UK's overall efficiency level has experienced a pretty good efficiency trend, reaching 100.00% in 2015, 100.00% in 2016, 100.00% in 2017, reaching 80.76% in 2018 due to inefficiency of fixed assets, staff expenses, total deposits, and loans. In 2019, the value reached 94.52% due to inefficiencies in fixed assets, staff expenses, total deposit, and loan variables. The average Amount (US Dollar) of efficiency is 95.05%. Improvements in the efficiency of the British Al-Rayan Islamic bank 2019 shows in Figure 5.

Al Rayan Bank PLC (formerly known as Islamic Bank of United Kingdom) is a commercial bank in the UK that offer sharia-compliant financial service products to customers of any religion. This bank is the first British Bank to claim to operate, as a whole, following Islamic principles. Based on the DEA calculation showing a figure of 94.52 percent and included in the Amber category, Islamic banks are approaching the point of efficiency. However, it may also be at risk if the inefficiency problem not handles, and attention is needed here.

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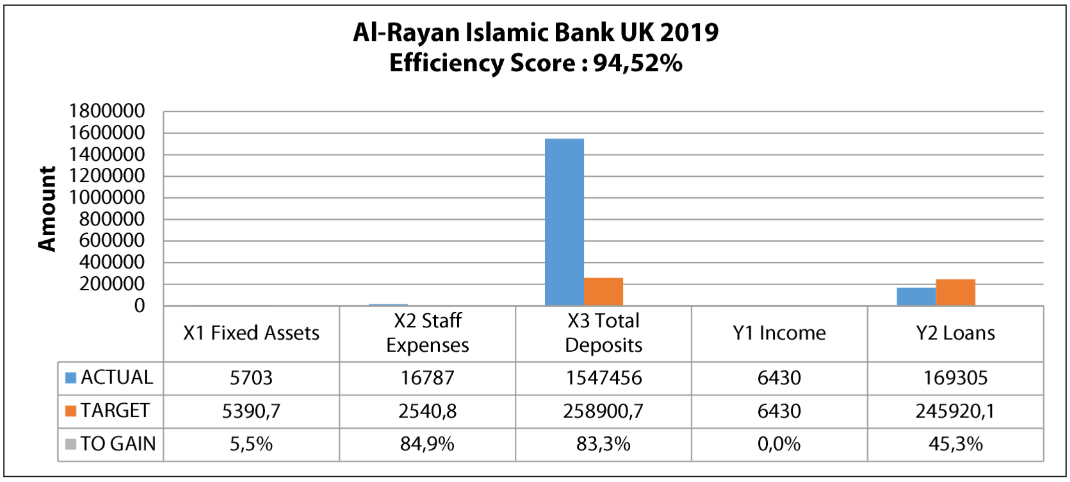
Table 7. Efficiency Levels of Al-Rayan Islamic Bank UK 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 100%	X1 Fixed Assets	261	261	0.0%	100%
	X2 Staff Expenses	5579	5579	0.0%	100%
	X3 Total Deposits	509803	509803	0.0%	100%
	Y1 Income	1215	1215	0.0%	100%
	Y2 Loans	82719	82719	0.0%	100%
2016: 100%	X1 Fixed Assets	5990	5990	0.0%	100%
	X2 Staff Expenses	7242	7242	0.0%	100%
	X3 Total Deposits	730713	730713	0.0%	100%
	Y1 Income	10272	10272	0.0%	100%
	Y2 Loans	139454	139454	0.0%	100%
2017: 100%	X1 Fixed Assets	6431	6431	0.0%	100%
	X2 Staff Expenses	9308	9308	0.0%	100%
	X3 Total Deposits	1222853	1222853	0.0%	100%
	Y1 Income	9501	9501	0.0%	100%
	Y2 Loans	216058	216058	0.0%	100%
2018: 80,76%	X1 Fixed Assets	6112	4935,8	19.2%	80.8%
	X2 Staff Expenses	13025	2834,9	78.2%	21.8%
	X3 Total Deposits	1596656	271934,9	83.0%	17.0%
	Y1 Income	8620	8620	0.0%	100%
	Y2 Loans	227594	278132,8	22.2%	81.8%
2019: 94.52%	X1 Fixed Assets	5703	5390.7	5.5%	94.5%
	X2 Staff Expenses	16787	2540.8	84.9%	15.1%
	X3 Total Deposits	1547456	258900.7	83.3%	16.7%
	Y1 Income	6430	6430	0.0%	100.0%
	Y2 Loans	169305	245920.1	45.3%	68.8%

Source: Data processed by Warwick Win DEA

A detailed calculation shows that the Al-Rayan Islamic bank of England in 2019 experienced inefficient waste in fixed assets, staff expenses, and total deposits. Spending on fixed assets must be reduced by 5.5 percent, while staff expenses must reduce to 84.9 percent, and total deposits must reduce to 83.3 percent. Through the same weighting of Al-Jazira Saudi Arabia Syariah Bank 2019 in terms of income, it is by the actual Amount (US Dollar) and target, while in terms of Loans, it must be increased again by 45.3 percent. According to Öndeş et al. (2019) also said Al-Rayan Islamic bank UK is almost efficient. The other factor that could make Al-Raryan Islamic bank almost efficient is because Al-Rayan Islamic bank is the most prominent Islamic Bank in the United Kingdom.

Figure 5. Improvements in the Efficiency of Al Rayan Islamic Bank of UK 2019



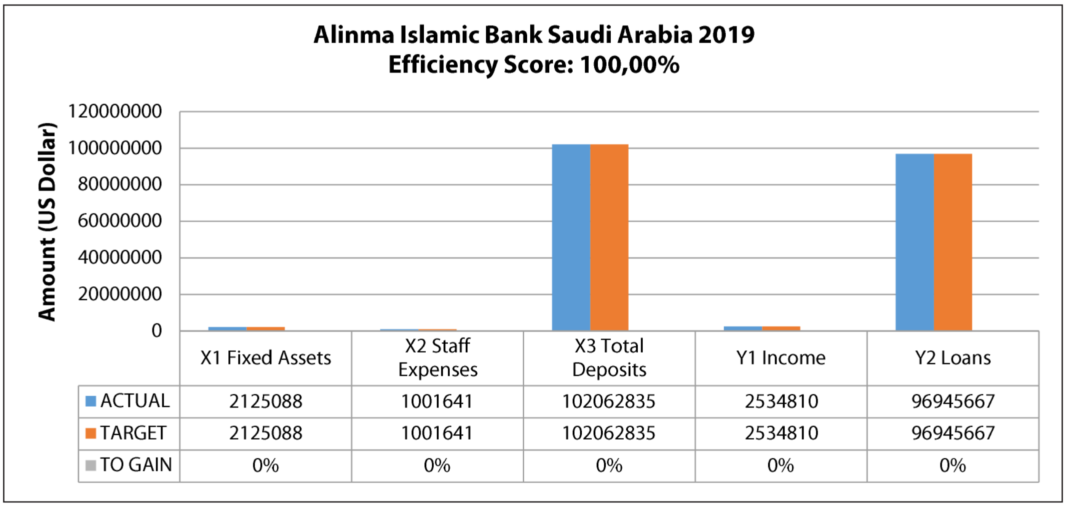
	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	5703	16787	1547456	6430	169305
TARGET	5390,7	2540,8	258900,7	6430	245920,1
TO GAIN	5,5%	84,9%	83,3%	0,0%	45,3%

Source: Data processed by Warwick Win DEA

6. Alinma Islamic Bank Saudi Arabia

Based on Table 8, during five years from 2015-2019, the overall efficiency level of Alinma Islamic bank has been outstanding, reaching 100.00% from 2015-2019, the average Amount (US Dollar) of efficiency is 100.00%. The future suggestion is that Alinma Islamic Bank Saudi Arabia must maintain this condition in the following year. The efficiency score of the Alinma Saudi Arabian Islamic bank 2019 shows in Figure 6.

Figure 6. Alinma Islamic Bank Saudi Arabia Efficiency Score 2019



	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	2125088	1001641	102062835	2534810	96945667
TARGET	2125088	1001641	102062835	2534810	96945667
TO GAIN	0%	0%	0%	0%	0%

Source: Data processed by Warwick Win DEA

Alinma Bank is a Saudi joint-stock company formed on March 28, 2006. Alinma provides a comprehensive range of retail and corporate banking following Shariah and investment services. The efficiency value obtained by Alinma Syariah Bank of Saudi Arabia in 2019 based on DEA calculation shows 100.00 percent and include in the Green category,

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which means that Islamic banks are in an efficient condition in terms of fixed assets, staff expenses, and total deposits, income and loans are in accordance between the actual number and the target. These results are consistent with research conducted by Hassan et al. (2018) that try to measure Islamic banks' performance in Saudi Arabia. The result said that overall, Alinma Bank Saudi Arabia has good efficiency.

Table 8. Alinma Islamic Bank Saudi Arabia Efficiency Score 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015 : 100%	X1 Fixed Assets	1326070	1326070	0.0%	100%
	X2 Staff Expenses	669975	669975	0.0%	100%
	X3 Total Deposits	65694524	65694524	0.0%	100%
	Y1 Income	1469976	1469976	0.0%	100%
	Y2 Loans	74097662	74097662	0.0%	100%
2016 : 100%	X1 Fixed Assets	1456919	1456919	0.0%	100%
	X2 Staff Expenses	755347	755347	0.0%	100%
	X3 Total Deposits	80612226	80612226	0.0%	100%
	Y1 Income	1502271	1502271	0.0%	100%
	Y2 Loans	87953728	87953728	0.0%	100%
2017 : 100%	X1 Fixed Assets	1607644	1607644	0.0%	100%
	X2 Staff Expenses	876009	876009	0.0%	100%
	X3 Total Deposits	89064751	89064751	0.0%	100%
	Y1 Income	2011357	2011357	0.0%	100%
	Y2 Loans	88851454	88851454	0.0%	100%
2018 : 100%	X1 Fixed Assets	1635884	1635884	0.0%	100%
	X2 Staff Expenses	939583	939583	0.0%	100%
	X3 Total Deposits	90128138	90128138	0.0%	100%
	Y1 Income	2856951	2856951	0.0%	100%
	Y2 Loans	92182356	92182356	0.0%	100%
2019 : 100%	X1 Fixed Assets	2125088	2125088	0.0%	100%
	X2 Staff Expenses	1001641	1001641	0.0%	100%
	X3 Total Deposits	102062835	102062835	0.0%	100%
	Y1 Income	2534810	2534810	0.0%	100%
	Y2 Loans	96945667	96945667	0.0%	100%

Source: Data processed by Warwick Win DEA

7. Al-Rajhi Islamic Bank Saudi Arabia

Based on Table 9, the efficiency level of Al-Rajhi Islamic Bank as a whole experienced a good efficiency trend, which reached 100.00% in 2015, 100.00% in 2016, 100.00% in 2017, decreased to 87.47% in 2018 due to inefficiency in fixed assets, staff expenses, and total deposits, and 100.00% in 2019. The average Amount (US Dollar) of efficiency is 97.49%. The efficiency score of Al-Rajhi Saudi Arabian Islamic Bank 2019 shows in Figure 7.

Table 9. Efficiency Score of Al-Rajhi Islamic Bank Saudi Arabia 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 100%	X1 Fixed Assets	5578931	5578931	0.0%	100%
	X2 Staff Expenses	2661043	2661043	0.0%	100%
	X3 Total Deposits	257821641	257821641	0.0%	100%
	Y1 Income	7130075	7130075	0.0%	100%
	Y2 Loans	237128924	237128924	0.0%	100%
2016: 100%	X1 Fixed Assets	6485162	6485162	0.0%	100%
	X2 Staff Expenses	2949886	2949886	0.0%	100%
	X3 Total Deposits	272593136	272593136	0.0%	100%
	Y1 Income	8125960	8125960	0.0%	100%
	Y2 Loans	251572649	251572649	0.0%	100%
2017: 100%	X1 Fixed Assets	7858127	7858127	0.0%	100%
	X2 Staff Expenses	2813918	2813918	0.0%	100%
	X3 Total Deposits	273056445	273056445	0.0%	100%
	Y1 Income	9120726	9120726	0.0%	100%
	Y2 Loans	244245368	244245368	0.0%	100%
2018: 87,47%	X1 Fixed Assets	8649435	6698594.7	22.6%	77.4%
	X2 Staff Expenses	2809449	2457394.1	12.5%	87.5%
	X3 Total Deposits	293909125	133392166	54.6%	45.4%
	Y1 Income	3767953	3767953	0.0%	100%
	Y2 Loans	264145966	264145966	0.0%	100%
2019: 100%	X1 Fixed Assets	10407247	10407247	0.0%	100%
	X2 Staff Expenses	2794046	2794046	0.0%	100%
	X3 Total Deposits	312405823	312405823	0.0%	100%
	Y1 Income	10158527	10158527	0.0%	100%
	Y2 Loans	281740987	281740987	0.0%	100%

Source: Data processed by Warwick Win DEA

Al Rajhi Bank, founded in 1957, is a bank originating from Saudi Arabia and is the largest Islamic bank in the world by capital. The efficiency value obtained by Al-Rajhi Islamic Bank of Saudi Arabia in 2019 based on DEA calculation shows 100.00 percent and include in the Green category. This result means that Islamic banks are efficient in terms of fixed assets, staff expenses, and total deposits, income, and loans. This fact shows no difference between the actual data (blue graph) and the target data or its ideal form (orange graph). According to the actual number and the target, the condition must maintain in the following year. The result is not surprising since many studies like from Hassan et al. (2018) have found that overall results summarize that Al-Rajhi is most efficient in Saudi Shari'ah compliant banking industry as commemorating a mean efficiency score followed by Al-Jazira and Al-Inma Bank, and AlRajhi also one of the most prominent Islamic Bank in Saudi Arabia.

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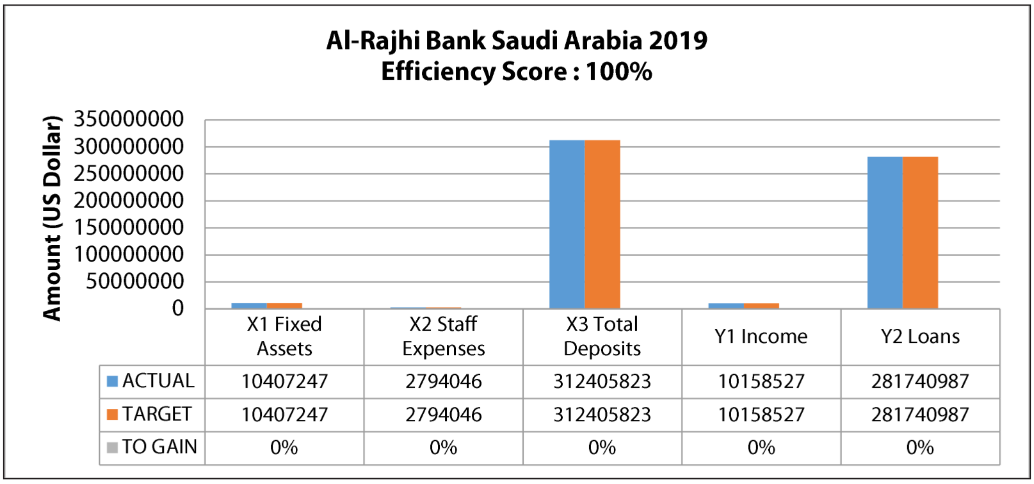
Figure 7. Efficiency Score of Al-Rajhi Islamic Bank Saudi Arabia 2019



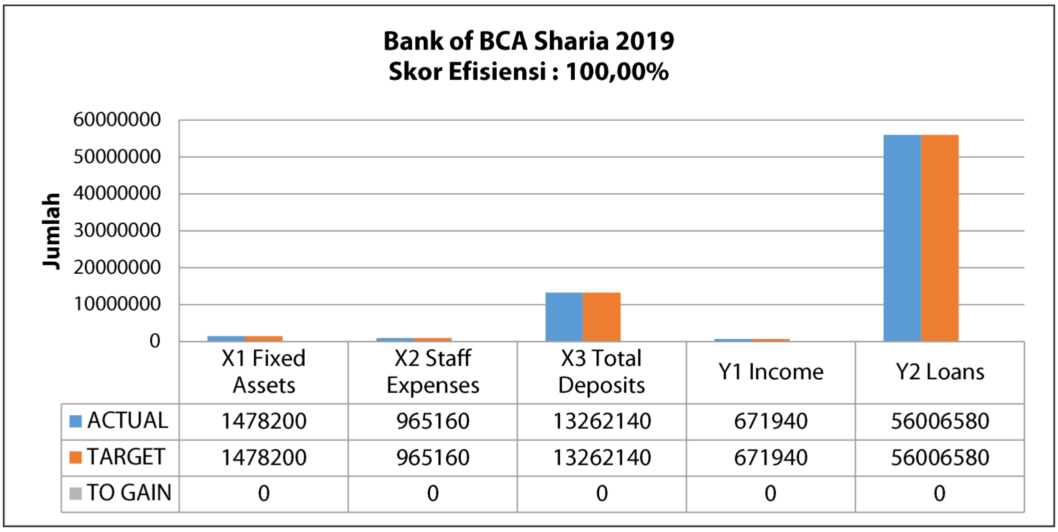
	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	10407247	2794046	312405823	10158527	281740987
TARGET	10407247	2794046	312405823	10158527	281740987
TO GAIN	0%	0%	0%	0%	0%

Source: Data processed by Warwick Win DEA

8. Bank of BCA Sharia, Indonesia

Based on Table 10, over the five years from 2015-2019, Bank of BCA Sharia's overall efficiency level has been outstanding, reaching 100.00% from 2015-2019. The average efficiency is 100.00%. Bank of BCA Sharia Indonesia 2019 efficiency score can be seen in Figure 7. The establishment of BCA Syariah Bank is inseparable from the development of Islamic banking in Indonesia. Initially, PT Bank BCA acquired PT Bank Utama Internasional on June 12, 2009. Subsequently, on March 2, 2010, based on a decision by the Governor of BI, there was a change in a conventional bank's activities to a sharia bank and change its name to PT Bank of BCA Sharia.

Figure 7. Bank of BCA Sharia Efficiency Score 2019



	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	1478200	965160	13262140	671940	56006580
TARGET	1478200	965160	13262140	671940	56006580
TO GAIN	0	0	0	0	0

Source: Data processed by Warwick Win DEA

The efficiency value obtained by Bank of BCA Sharia Indonesia 2019 based on DEA calculation shows 100.00 percent and include in the Green category. This result means that Islamic banks are efficient in terms of fixed assets, staff expenses, and total deposits, income, and loans. This study's results contradict previous research by Bayuny & Haron (2017), that find the overall value of BCA Syariah Bank has not had a good enough efficiency in recent years.

Table 10. Bank of BCA Sharia Efficiency Score 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015 : 100%	X1 Fixed Assets	400008	400008	0.0%	100%
	X2 Staff Expenses	650561	650561	0.0%	100%
	X3 Total Deposits	3517485	3517485	0.0%	100%
	Y1 Income	234368	234368	0.0%	100%
	Y2 Loans	32470958	32470958	0.0%	100%
2016 : 100%	X1 Fixed Assets	507247	507247	0.0%	100%
	X2 Staff Expenses	807026	807026	0.0%	100%
	X3 Total Deposits	3652647	3652647	0.0%	100%
	Y1 Income	368163	368163	0.0%	100%
	Y2 Loans	37486973	37486973	0.0%	100%
2017 : 100%	X1 Fixed Assets	813538	813538	0.0%	100%
	X2 Staff Expenses	882677	882677	0.0%	100%
	X3 Total Deposits	6601959	6601959	0.0%	100%
	Y1 Income	478602	478602	0.0%	100%
	Y2 Loans	37388419	37388419	0.0%	100%
2018 : 100%	X1 Fixed Assets	1262807	1262807	0.0%	100%
	X2 Staff Expenses	921488	921488	0.0%	100%
	X3 Total Deposits	6697386	6697386	0.0%	100%
	Y1 Income	583670	583670	0.0%	100%
	Y2 Loans	53889752	53889752	0.0%	100%
2019 : 100%	X1 Fixed Assets	1478200	1478200	0.0%	100%
	X2 Staff Expenses	965160	965160	0.0%	100%
	X3 Total Deposits	13262140	13262140	0.0%	100%
	Y1 Income	671940	671940	0.0%	100%
	Y2 Loans	56006580	56006580	0.0%	100%

Source: Data processed by Warwick Win DEA

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9. Bank of BNI Sharia, Indonesia

Based on Table 11, over the five years from 2015-2019, the overall efficiency level of Bank BNI Syariah Indonesia has an excellent trend of efficiency, reaches 100.00% from 2015-2019. The average efficiency is 100.00%. Bank BNI Syariah Indonesia 2019 efficiency score can be seen in Figure 8. Finally, after ten years passed, on June 19, 2010, following the BI Governor's decree, BNI Syariah was separated from conventional banks.

The efficiency value obtained by Bank BNI Syariah Indonesia 2019 shows 100.00 percent and include in the Green category. This result means that Islamic banks are in an efficient condition in terms of fixed assets, staff expenses, total deposits, income, and loans following the Amount (US Dollar) actual and targe. This condition shows no difference between the actual data and the target data or its ideal form. These conditions must maintain in the following year.

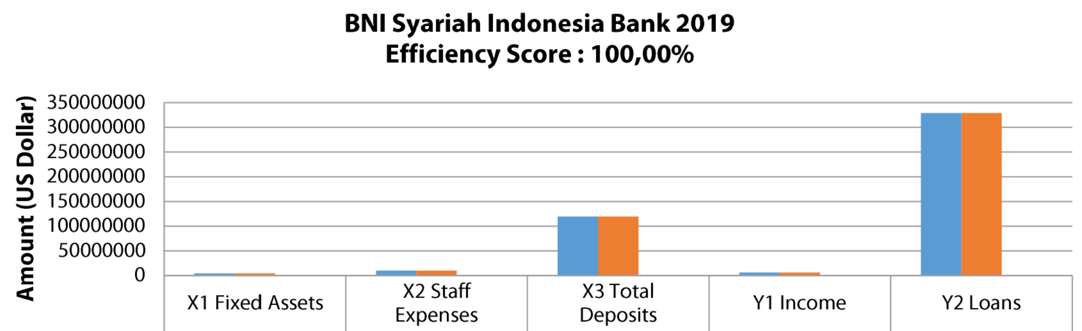
Table 11. BNI Syariah Indonesia Bank Efficiency Score and improvement 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 100%	X1 Fixed Assets	1597590	1597590	0.0%	100%
	X2 Staff Expenses	6695850	6695850	0.0%	100%
	X3 Total Deposits	27807360	27807360	0.0%	100%
	Y1 Income	2285250	2285250	0.0%	100%
	Y2 Loans	174737310	174737310	0.0%	100%
2016: 100%	X1 Fixed Assets	2145850	2145850	0.0%	100%
	X2 Staff Expenses	7509100	7509100	0.0%	100%
	X3 Total Deposits	40790840	40790840	0.0%	100%
	Y1 Income	2773750	2773750	0.0%	100%
	Y2 Loans	201562030	201562030	0.0%	100%
2017: 100%	X1 Fixed Assets	2307590	2307590	0.0%	100%
	X2 Staff Expenses	7076900	7076900	0.0%	100%
	X3 Total Deposits	59707870	59707870	0.0%	100%
	Y1 Income	3066860	3066860	0.0%	100%
	Y2 Loans	233815890	233815890	0.0%	100%
2018: 100%	X1 Fixed Assets	3475050	3475050	0.0%	100%
	X2 Staff Expenses	9377940	9377940	0.0%	100%
	X3 Total Deposits	88354450	88354450	0.0%	100%
	Y1 Income	4160800	4160800	0.0%	100%
	Y2 Loans	279062160	279062160	0.0%	100%
2019: 100%	X1 Fixed Assets	4674740	4674740	0.0%	100%
	X2 Staff Expenses	10121350	10121350	0.0%	100%
	X3 Total Deposits	119404040	119404040	0.0%	100%
	Y1 Income	6031530	6031530	0.0%	100%
	Y2 Loans	328993470	328993470	0.0%	100%

Source: Data processed by Warwick Win DEA

These results are consistent with research conducted by Sufian & Kamarudin (2015) that find Bank of BNI Sharia in overall has good efficiency if compare with other Islamic banks in in Southeast Asia, namely Malaysia, Indonesia, and Brunei comparing with Foreign Islamic Banks from the Middle East. This finding also supports by Havidz & Setiawan (2015) that find that BNI Sharia has good efficiency due to the assets in Indonesia.

Figure 8. BNI Syariah Indonesia Bank Efficiency Score 2019



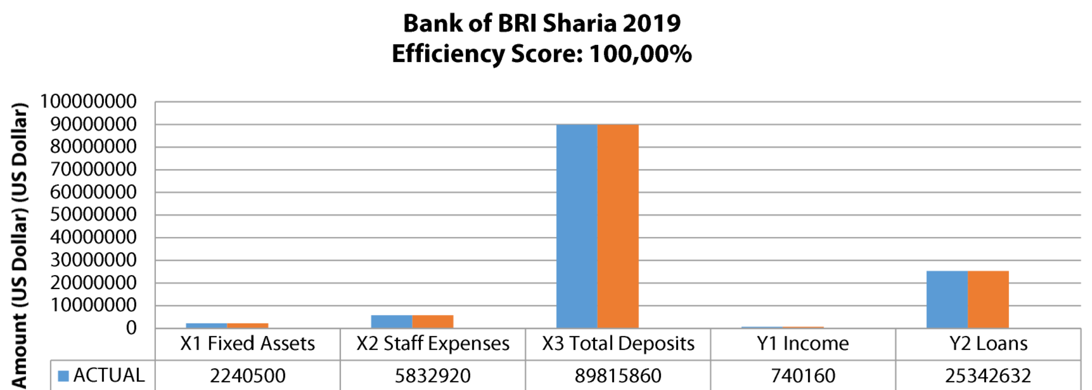
	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	4674740	10121350	119404040	6031530	328993470
TARGET	4674740	10121350	119404040	6031530	328993470
TO GAIN	0	0	0	0	0

Source: Data processed by Warwick Win DEA

10. Bank of BRI Sharia, Indonesia

Based on Table 12, the efficiency levels of BRI Sharia Indonesia Bank as a whole has a good trend, reaching 100.00% in 2015, 100.00% in 2016, decreasing to 99.56% in 2017 due to inefficiencies in fixed assets, staff expenses, total deposit, and income. The value reached 100.00% in 2018 and 2019. The average efficiency is 99.91%. Bank of BRI Sharia Indonesia 2019 efficiency score can be seen in Figure 9.

Figure 9. Bank of BRI Sharia Indonesia Efficiency Scores 2019



	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	2240500	5832920	89815860	740160	25342632
TARGET	2240500	5832920	89815860	740160	25342632
TO GAIN	0%	0%	0%	0%	0%

Source: Data processed by Warwick Win DEA

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Table 12. Bank of BRI Sharia Efficiency Scores and Improvement 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015 : 100%	X1 Fixed Assets	1561880	1561880	0.0%	100%
	X2 Staff Expenses	5090980	5090980	0.0%	100%
	X3 Total Deposits	46547600	46547600	0.0%	100%
	Y1 Income	1226370	1226370	0.0%	100%
	Y2 Loans	164207140	164207140	0.0%	100%
2016 : 100%	X1 Fixed Assets	1408160	1408160	0.0%	100%
	X2 Staff Expenses	5382270	5382270	0.0%	100%
	X3 Total Deposits	53063210	53063210	0.0%	100%
	Y1 Income	1702090	1702090	0.0%	100%
	Y2 Loans	179963590	179963590	0.0%	100%
2017 : 99,56%	X1 Fixed Assets	1779350	1771506	0.4%	99.6%
	X2 Staff Expenses	5220670	5197655	0.4%	99.6%
	X3 Total Deposits	65189960	48590488	25.5%	74.5%
	Y1 Income	1010910	2347121	56.9%	43.1%
	Y2 Loans	175202200	175202200	0.0%	100%
2018 : 100%	X1 Fixed Assets	2214440	2214440	0.0%	100%
	X2 Staff Expenses	5108280	5108280	0.0%	100%
	X3 Total Deposits	78810470	78810470	0.0%	100%
	Y1 Income	1066000	1066000	0.0%	100%
	Y2 Loans	198268090	198268090	0.0%	100%
2019 : 100%	X1 Fixed Assets	2240500	2240500	0.0%	100%
	X2 Staff Expenses	5832920	5832920	0.0%	100%
	X3 Total Deposits	89815860	89815860	0.0%	100%
	Y1 Income	740160	740160	0.0%	100%
	Y2 Loans	25342632	25342632	0.0%	100%

Source: Data processed by Warwick Win DEA

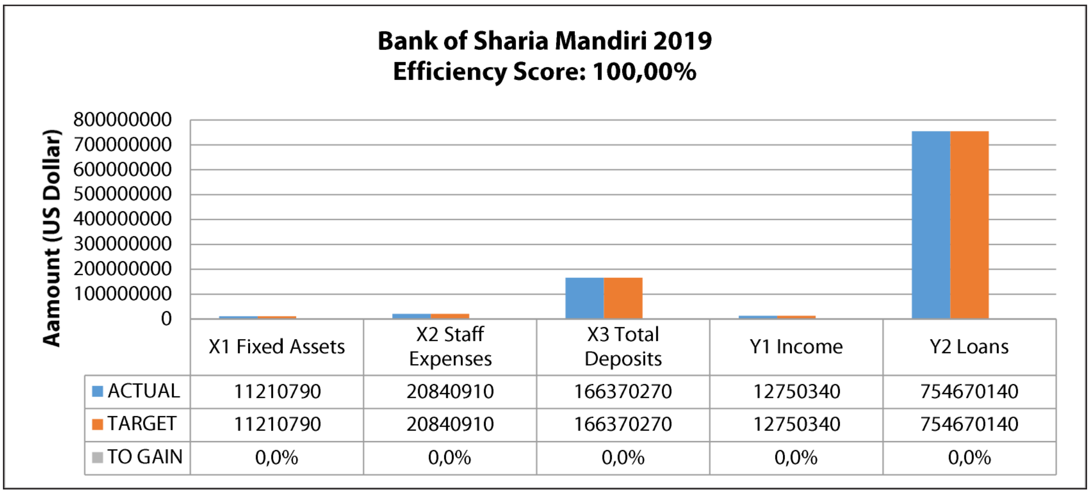
The establishment of Bank of BRI Sharia began with the acquisition process of PT Bank Jasa Arta by PT Bank BRI in 2007. Furthermore, following the Decree of the Governor of BI on November 17, 2008, Bank of BRI Sharia officially carried out its activities according to Islamic principles. The efficiency value obtained by Bank Syariah Syariah Indonesia 2019 based on DEA calculation shows 100.00 percent and include in the Green category. This condition means that Islamic banks are in an efficient condition in terms of fixed assets, staff expenses, total deposits, income, and Loans are by the Amount (US Dollar) actual and target. This fact shows no difference between the actual data (blue graph) and the target data or its ideal form (orange graph). These conditions must maintain in the following year.

These results are consistent with Sufian & Kamarudin (2015), showing that the Bank of BRI Sharia has a good efficiency. Because BRI Sharia is one of the banks with the most considerable assets and has human resources inclusive to the regions, these results are also relevant to previous research conducted by Zuhroh et al. (2015). who researched the cost efficiency of Islamic banks in Indonesia said that Bank of BRI Sharia Bank has good inclusiveness and good value trend efficiency.

11. Bank of Sharia Mandiri

Table 13 shows that the efficiency levels of Bank Bank of Sharia Mandiri as a whole the efficiency trend has fluctuated. The value reaching 68.88% in 2015, 76.69% in 2016, 100.00% in 2017, 100.00% in 2018, and 100.00% in 2019. The average total efficiency was 89.11%. Bank of Sharia Mandiri bank efficiency scores 2019 shows in Figure 10.

Figure 10. Bank of Sharia Mandiri Efficiency Scores 2019



Source: Data processed by Warwick Win DEA

The efficiency value obtained by Bank of Sharia Mandiri 2019 based on DEA calculation shows 100.00 percent and include in the Green category. According to the Amount (US Dollar) actual and target, this value means that Islamic banks are in an efficient condition in terms of fixed assets, staff expenses, total deposits, Income, and Loans according to the Amount (US Dollar) actual and target. This condition shows no difference between the actual data and the target data or its ideal form. These conditions must maintain in the following year. This result is not surprising because it agrees with previous research conducted by Widiarti et al. (2015) and Hidayati et al. (2017). The research finds that Bank of Sharia Mandiri is experiencing a relatively good trend of efficiency. One of the factors is because it has quality resources.

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Table 13. Bank of Sharia Mandiri Efficiency Scores and Improvement 2015-2019

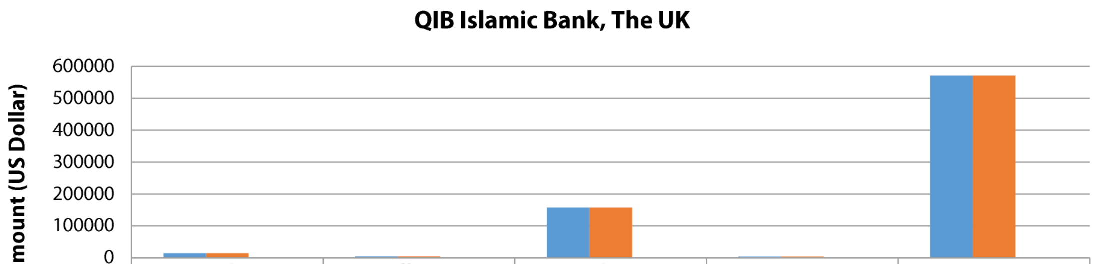
Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 68,88%	X1 Fixed Assets	11241363	7742582	31.1%	68.9%
	X2 Staff Expenses	13702146	9437467	31.1%	68.9%
	X3 Total Deposits	80579490	55499795	31.1%	68.9%
	Y1 Income	2895757	3681075	27.1%	78.7%
	Y2 Loans	490174614	490174614	0.0%	100%
2016: 76,69%	X1 Fixed Assets	9732730	7464490	23.3%	76.7%
	X2 Staff Expenses	14851750	11390508	23.3%	76.7%
	X3 Total Deposits	94542880	72509400	23.3%	76.7%
	Y1 Income	3254140	5499562	69.0%	59.2%
	Y2 Loans	543884260	543884260	0.0%	100.0%
2017: 100%	X1 Fixed Assets	8815040	8815040	0.0%	100.0%
	X2 Staff Expenses	15992620	15992620	0.0%	100.0%
	X3 Total Deposits	116293340	116293340	0.0%	100.0%
	Y1 Income	3651660	3651660	0.0%	100.0%
	Y2 Loans	586787860	586787860	0.0%	100.0%
2018: 100%	X1 Fixed Assets	9846300	9846300	0.0%	100.0%
	X2 Staff Expenses	18059750	18059750	0.0%	100.0%
	X3 Total Deposits	124557640	124557640	0.0%	100.0%
	Y1 Income	6052130	6052130	0.0%	100.0%
	Y2 Loans	663531620	663531620	0.0%	100.0%
2019: 100%	X1 Fixed Assets	11210790	11210790	0.0%	100.0%
	X2 Staff Expenses	20840910	20840910	0.0%	100.0%
	X3 Total Deposits	166370270	166370270	0.0%	100.0%
	Y1 Income	12750340	12750340	0.0%	100.0%
	Y2 Loans	754670140	754670140	0.0%	100.0%

Source: Data processed by Warwick Win DEA

12. Qatar Islamic Bank (QIB), the UK

Based on Table 14, during five years from 2015-2019, the Bank of England QIB Islamic Bank's overall efficiency level was excellent, reaching 100.00% from 2015-2019. The average efficiency is 100.00%. The Bank of England QIB 2019 efficiency score can be seen in Figure 10. The efficiency value obtained by Bank QIB 2019 shows 100.00 percent. This value means that Islamic banks are efficient in terms of fixed assets, staff expenses, total deposits, income, and loans by the actual Amount (US Dollar). These conditions must be maintained the following year. This result contradicts with Öndeş et al. (2019) that find QIB Bank efficiency is fluctuating.

Figure 10. QIB Islamic Bank UK Efficiency Scores 2019



	X1 Fixed Assets	X2 Staff Expenses	X3 Total Deposits	Y1 Income	Y2 Loans
ACTUAL	14434	4876	158005	4427	571245
TARGET	14434	4876	158005	4427	571245
TO GAIN	0	0	0	0	0

Source: Data processed by Warwick Win DEA

Table 14. QIB Islamic Bank UK Efficiency Scores and Improvement 2015- 2019

Efficiency Score	Variable	**Actual**	**Target**	**To Gain**	**Achieved**
2015: 100%	X1 Fixed Assets	16249	16249	0.0%	100%
	X2 Staff Expenses	3715	3715	0.0%	100%
	X3 Total Deposits	7726	7726	0.0%	100%
	Y1 Income	2548	2548	0.0%	100%
	Y2 Loans	299627	299627	0.0%	100%
2016: 100%	X1 Fixed Assets	15827	15827	0.0%	100%
	X2 Staff Expenses	3977	3977	0.0%	100%
	X3 Total Deposits	132498	132498	0.0%	100%
	Y1 Income	131	131	0.0%	100%
	Y2 Loans	397313	397313	0.0%	100%
2017: 100%	X1 Fixed Assets	15354	15354	0.0%	100%
	X2 Staff Expenses	4569	4569	0.0%	100%
	X3 Total Deposits	148083	148083	0.0%	100%
	Y1 Income	1760	1760	0.0%	100%
	Y2 Loans	428522	428522	0.0%	100%
2018: 100%	X1 Fixed Assets	14837	14837	0.0%	100%
	X2 Staff Expenses	4631	4631	0.0%	100%
	X3 Total Deposits	157790	157790	0.0%	100%
	Y1 Income	3713	3713	0.0%	100%
	Y2 Loans	518870	518870	0.0%	100%
2019: 100%	X1 Fixed Assets	14434	14434	0.0%	100%
	X2 Staff Expenses	4876	4876	0.0%	100%
	X3 Total Deposits	158005	158005	0.0%	100%
	Y1 Income	4427	4427	0.0%	100%
	Y2 Loans	571245	571245	0.0%	100%

Source: Data processed by Warwick Win DEA

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13. Rasmala Islamic Bank, The UK

During five years from 2015-2019, the Rasmala Islamic Bank UK's overall efficiency level was outstanding. The value is reaching 100.00% from 2015-2019. The average amount of efficiency is 100.00%. Recommendations in the efficiency of the Rasmala Islamic Bank UK 2019 shows in Figure 11.

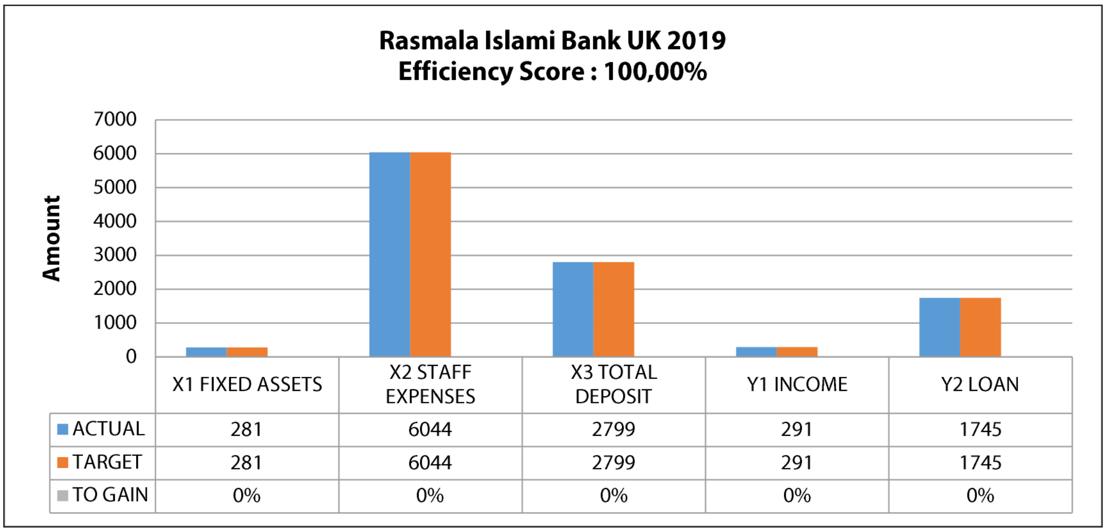
Table 15. Rasmala Islamic Bank, The UK Efficiency Scores 2015-2019

Efficiency Score	Variable	Actual	Target	To Gain	Achieved
2015: 100%	X1 Fixed Assets	174	174	0.0%	100%
	X2 Staff Expenses	5378	5378	0.0%	100%
	X3 Total Deposits	6630	6630	0.0%	100%
	Y1 Income	600	600	0.0%	100%
	Y2 Loans	40244	40244	0.0%	100%
2016: 100%	X1 Fixed Assets	344	344	0.0%	100%
	X2 Staff Expenses	6199	6199	0.0%	100%
	X3 Total Deposits	4180	4180	0.0%	100%
	Y1 Income	249	249	0.0%	100%
	Y2 Loans	34056	34056	0.0%	100%
2017: 100%	X1 Fixed Assets	309	309	0.0%	100%
	X2 Staff Expenses	6957	6957	0.0%	100%
	X3 Total Deposits	6847	6847	0.0%	100%
	Y1 Income	135	135	0.0%	100%
	Y2 Loans	20565	20565	0.0%	100%
2018: 100%	X1 Fixed Assets	273	273	0.0%	100%
	X2 Staff Expenses	8065	8065	0.0%	100%
	X3 Total Deposits	6359	6359	0.0%	100%
	Y1 Income	236	236	0.0%	100%
	Y2 Loans	4931	4931	0.0%	100%
2019: 100%	X1 Fixed Assets	281	281	0.0%	100%
	X2 Staff Expenses	6044	6044	0.0%	100%
	X3 Total Deposits	2799	2799	0.0%	100%
	Y1 Income	291	291	0.0%	100%
	Y2 Loans	1745	1745	0.0%	100%

Source: Data processed by Warwick Win DEA

The efficiency value obtained by Rasmala Bank UK 2019 based on DEA calculation shows 100.00 percent. The value means that Islamic banks are in an efficient condition in terms of fixed assets, staff expenses, and total deposits, Income, and Loans according to the actual Amount (US Dollar). This condition from the fact that there is no difference between the actual data and the target data or its ideal form. Rasmala Bank can have efficient results, but these results are not relevant to previous research from Öndeş et al. (2019) that Islamic banks in the UK experienced inefficiency and Turkish Islamic banks experienced efficiency, including Rasmala Bank, one of the factors was because Rasmala Bank UK's assets were still small. However, These results also prove that the assets' size does not necessarily affect the efficiency value.

Figure 11. Rasmala Islamic Bank UK Efficiency Scores 2019



	X1 FIXED ASSETS	X2 STAFF EXPENSES	X3 TOTAL DEPOSIT	Y1 INCOME	Y2 LOAN
ACTUAL	281	6044	2799	291	1745
TARGET	281	6044	2799	291	1745
TO GAIN	0%	0%	0%	0%	0%

Source: Data processed by Warwick Win DEA

Conclusion

This research calculates the efficiency of 13 Islamic banks in Indonesia, Saudi Arabia, and the United Kingdom for the 2015-2019 period. The result shows that in 2015 there were ten efficient Islamic banks and three Islamic banks experiencing inefficiency. In 2016 there were nine Islamic banks that efficient and four Islamic banks that experience inefficiency. There were ten Islamic banks that efficient and three Islamic banks that inefficient in 2017. In 2018 there were seven Islamic banks that efficient and six sharia banks that were inefficient. Finally, in 2019, there are eight efficient Islamic banks and five inefficient Islamic banks. During the 2015-2019 period, each Islamic Bank in Indonesia, the UK, and Saudi Arabia had different efficiency levels.

Some variables are inefficient, like from total assets, staff expenses, and total deposit variables. The 100% efficient rate shows that Islamic banks have been right in allocating production factors compared with other Islamic banks. Specific results obtained through managerial simulations indicate that Islamic banks can be improved to be efficient in the future. The efficiency levelof an inefficient Islamic bank base on its variables. If labor expenditure is inefficient, then the number of workers handling Islamic banks is too much. To overcome inefficiencies in the workers can be done by adding production aids. Inefficiencies in total assets and total deposits state that the Islamic banks are relatively wasteful in allocating them.

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Inefficiencies in income and loans indicate that the Islamic Bank produces relatively less income and loans than other Islamic banks, where efficient Islamic banks can produce more with the same input and output ratio. The inefficiency of staff expenses indicates that Islamic banks' inefficient workers are relatively less productive than Islamic banks whose workers are efficient.

Based on the results of the study's conclusions and limitations, suggestions that can be submitted to improve efficiency are: First, reducing the workers of inefficient Islamic banks. Second, reallocating wastage of total variables assets and total deposits. Third, implementing policies that can result in increased income and loans. Fourth, this research should be preceded by local-level research to obtain an average picture of input and output allocations so that data accuracy is better than before. Fifth, Islamic banks can use this research to reduce wasteful variables like the number of workers and staff cost efficiency and optimize those that are still less than optimal, like income and loan to achieve efficiency.

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Economic Turmoil in Islamic Banking Investment

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Abstract. *Investment financing is one of the operational activities of Islamic banking to encourage the real sector. This study aims to analyze the effect of economic turmoil on investment financing, analyze the response to investment financing, and analyze each variable's contribution in explaining the diversity of investment financing. This study uses monthly time series data from 2009 to 2020 using the Vector Error Correction Model (VECM) analysis. The results show that the exchange rate, inflation, and interest rates significantly affect Islamic banking investment financing in the long term. The response to investment financing is the fastest to achieve stability when it responds to shocks to the composite stock price index. Inflation is the most significant contribution in explaining diversity in investment financing. Islamic banking should increase the proportion of funding for investment. Customers can have a larger business scale to encourage economic growth, with investment financing increasing.*

Keywords: *investment, vector error correction model, exchange rates, inflation, interest rates*
JEL Classification: E22, G11, G24

Abstrak. *Pembiayaan investasi merupakan salah satu kegiatan operasional perbankan syariah untuk mendorong sektor riil. Penelitian ini bertujuan untuk menganalisis pengaruh gejolak ekonomi terhadap pembiayaan investasi, menganalisis respon pembiayaan investasi, dan menganalisis kontribusi setiap variabel dalam menjelaskan keberagaman pembiayaan investasi. Penelitian ini menggunakan data time series bulanan dari tahun 2009 hingga 2020 dengan menggunakan analisis Vector Error Correction Model (VECM). Hasil menunjukkan nilai tukar, inflasi, dan suku bunga berpengaruh signifikan terhadap pembiayaan investasi perbankan syariah dalam jangka panjang. Respon pembiayaan investasi paling cepat mencapai stabilitas saat merespon guncangan indeks harga saham gabungan. Kontribusi paling signifikan dalam menjelaskan keragaman pembiayaan investasi berasal dari inflasi. Perbankan syariah dapat meningkatkan proporsi pendanaan untuk investasi. Peningkatan pembiayaan investasi dapat membuat nasabah memiliki skala usaha yang lebih besar untuk mendorong pertumbuhan ekonomi.*

Kata Kunci: *investasi, vector error correction model, nilai tukar, inflasi, tingkat suku bunga*

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Introduction

Banking has an important role in the framework of a country's economic development (Aluko & Ajayi, 2018; Djalilov & Piesse, 2019). This role is related to the bank's function as an intermediary institution that absorbs funds from the public and distributes them to people in need (Trimulato, 2019; Werner, 2016). Economic growth correlates with financial instruments provided by the banking sector (Aali-Bujari et al., 2017; Duican & Pop, 2015). To achieve economic growth at the desired level, the operational activities carried out by banks must encourage the business world (Donaldson & Walsh, 2015; Kodongo & Ojah, 2016; Kudrin & Gurvich, 2015).

The presence of Islamic banks is not only to provide an alternative to non-usury banking for the community but also to develop the real sector (Christanti et al., 2017; Sofhian, 2015). This is in line with the explanation regarding Islamic banks, which are financial institutions that function to facilitate economic mechanisms in the actual industry through business activities based on sharia principles (Setyowati et al., 2017). Sharia banking operational activities to encourage the business world to provide financing (Salman & Nawaz, 2018).

Based on the use and business category, Islamic banking financing is differentiated into investment financing, namely funding for the procurement of production facilities or equipment—working capital financing, namely financing for the supply of raw materials or traded goods. Consumptive financing namely intended funding for the purchase of an item that is used for individual interests. One form of sharia banking operational activity is providing investment financing (Trisanty, 2018). Increased investment in the real sector will also encourage and boost economic growth (Nwakoby & Bernard, 2016). Investment financing is useful for people who are doing business to increase their production, for example, raw material supplies, finished material supplies, daily operational costs, and others so that they can run their business normally and smoothly (Fowowe, 2017; Liu et al., 2019; Mazzucato & Semieniuk, 2018).

The increase in investment obtained from Islamic banking will increase its production capacity and then have an impact on improving business expansion, which will create new jobs (Shawtari et al., 2015; Tawfiqi & Hamdan, 2018; Wahyudi & Sani, 2014). Another effect is the creation of new jobs that will reduce unemployment (Pohlan, 2019). The growing number of workers will increase per capita income, improve people's purchasing power, and increase national income (Kavya & Shijin, 2020; Leimbach et al., 2017; Rothenberg et al., 2016).

Research related to economic shocks has been carried out by Pradhan and Bagchi (2013) on economic growth in India, Kuo (2016)endogeneity and persistency on stock prices, Avdoulas et al. (2016) on capital markets in Europe, Chen et al. (2017)a sector assuming increasing importance in the national economy. The Global Vector Autoregressive (GVAR in real estate industry in China, BenSaïda et al. (2018)and by incorporating a fast-tractable Markov regime-switching framework into the vector autoregressive (VAR on the money market, Ibrahim & Ebrahim (2018) on the Islamic capital market, Apergis et al. (2019) on the price of gold, Chun et al. (2019) on the amount of oil, and Giordano et al.

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(2019) on the industry housing in Italy. From the existing research, no one has examined the relation to economic shocks to investment. Therefore, this research was conducted to fill in the gaps in the study that was already done.

This research aims to analyze the effect of economic turmoil on Islamic banking investment financing, analyze the response of Islamic banking investment financing to the financial crisis, and analyze the contribution of each variable in explaining the diversity of Islamic banking investment financing. This research contributes first to provide input and consideration in making decisions related to Islamic banking investment financing. Second, this research can give knowledge about the role of Islamic banking in financing investment. Third, this research can be used as a reference for conducting further research.

Methods

This study's type of data is secondary data in the form of time series data with monthly frequencies from January 2009 to March 2020. The research data comes from various publications at Bank Indonesia, the Financial Services Authority, the Central Bureau of Statistics, and the Indonesian Stock Exchange. The methods of analysis and data processing used in this research are descriptive and quantitative. A descriptive approach is used to describe the data to be used and to facilitate interpretation. The quantitative method is used to analyze the factors affecting the investment financing of Islamic banking using time series analysis. These factors include investment financing (INV), exchange rate (EXC), inflation (INFL), interest rates (RATE), Islamic stock index (JII), and the Composite Stock Price Index (IHSG).

The time-series data model is an econometric model built on existing economic theory. The estimation of this model can provide information to test existing hypotheses. However, often economic theory has not been able to determine the right specifications for the model because the current economic phenomena are too complicated. Vector Autoregressive (VAR) can be used to overcome this in time series data. The analysis tool used in this research is the Vector Autoregression (VAR) method if the data used is stationary, and there is no cointegration.

In contrast, if the data used is stable and there is cointegration, the Vector Error Correction Model (VECM) method is used. Therefore, before conducting an analysis using the VAR / VECM method, several tests are required, including the stationarity test, optimum lag test, stability test, and cointegration test, VECM estimation, Impulse Response Function (IRF), and Forecasting Error Variance Decomposition (FEVD). The VECM model to be analyzed is a model of Islamic banking investment financing. Where c is constant, coefficient, t time, and n lag length.

$$INV_t = c + \alpha_1 EXC_{t-n} + \alpha_2 INFL_{t-n} + \alpha_3 RATE_{t-n} + \alpha_4 JII_{t-n} + \alpha_5 IHSG_{t-n} + \varepsilon_t$$

Vector Error Correction Model (VECM) is a method that functions as an approach to estimate the long-term and short-term relationships of one time-series data against other time-series data, see a shock, and analyze the variability of variables in influencing other variables. The long-term relationship can be analyzed through the cointegration equation on the VECM test results.

Results and Discussion

The stationarity test is essential when estimating models for time series data. This test is carried out to avoid spurious regression, which causes the estimation results to be incorrect because of the unit root in the variables used. The stationarity test of this research uses the Augmented-Dickey-Fuller (ADF) test and the Phillips Perron (PP) test with a critical value of 5 percent. The first stationarity test was carried out at the level. If at the level, it is known that there is a unit root in the data, then a stationarity test is carried out for the first difference. The stationarity test for the first difference was carried out by lowering the level data. The data stationarity test results (Table 1) show that all variables are stationary at the data level, except for the exchange rate variable. However, when the data were in the first difference, all variables were stationary.

Table 1. The Results of the data Stationarity Test

Variable	Augmented Dickey-Fuller Test		Phillips-Perron Test	
	Level	Difference	Level	Difference
EXC	0.8368	0.0128	0.8044	0.0000
INV	0.0014	0.0385	0.0091	0.0000
INFL	0.0020	0.0000	0.0014	0.0000
RATE	0.0229	0.0000	0.0180	0.0000
JII	0.0001	0.0000	0.0002	0.0000
IHSG	0.0000	0.0000	0.0001	0.0000

The optimal lag test is an important step that must be done in using the VAR model. The optimal lag is intended to show how long a variable reacts to other variables and to eliminate autocorrelation problems in a VECM system. This test (Table 2) is available in several types of information, including Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ). The optimal lag test results for investment financing show that the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ) criteria are at lag 1. In this study, the optimum lag criterion used is the Schwarz Criterion (SC), which is at lag 1.

Table 2. Optimal lag test results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	1149.356	NA	4.57e-16	-18.29370	-18.15794	-18.23854
1	2023.885	1651.111	6.82e-22*	-31.71016*	-30.75985*	-31.32410*
2	2046.629	40.75675	8.47e-22	-31.49806	-29.73320	-30.78109
3	2080.307	57.11772*	8.87e-22	-31.46091	-28.88149	-30.41303
4	2098.957	29.84078	1.19e-21	-31.18332	-27.78934	-29.80452
5	2120.809	32.86473	1.54e-21	-30.95694	-26.74841	-29.24724

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Lag	LogL	LR	FPE	AIC	SC	HQ
6	2153.183	45.58253	1.71e-21	-30.89893	-25.87584	-28.85831
7	2189.222	47.28307	1.83e-21	-30.89955	-25.06191	-28.52802
8	2213.759	29.83713	2.40e-21	-30.71614	-24.06395	-28.01371
9	2239.550	28.88603	3.19e-21	-30.55280	-23.08605	-27.51945
10	2277.479	38.83974	3.63e-21	-30.58367	-22.30237	-27.21941

*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

The stability test is needed to obtain valid Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) results. The modulus value of the investment financing model in this study is in the range of 0.690604-0.991763. Based on the results of the stability test of the VAR model (Table 3), it can be concluded that the VAR system is stable because all its roots are in a unit circle or have a modulus value of less than one, the VAR model is considered stable so that the resulting Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) are considered valid.

Table 3. Stability Test Results

Root	Modulus
0.991763	0.991763
0.989163	0.989163
0.864383 - 0.073770i	0.867525
0.864383 + 0.073770i	0.867525
0.811159	0.811159
0.690604	0.690604

No root lies outside the unit circle.
VAR satisfies the stability condition.

The cointegration test is to determine the presence or absence of non-stationary variables at the cointegration level. Cointegration testing in this study uses the Johansen cointegration test. Long-term information is obtained by determining the cointegration rank first. The cointegration testing criteria in this study was based on the trace statistic value. Suppose the trace statistic value is higher than the critical value of five percent. In that case, the alternative hypothesis states the amount of cointegration is accepted so that the number of co-integrated equations in the system can be seen—the Johansen cointegration test results on investment financing. There are two cointegration relationships, namely when the trace statistic value is higher than the critical value. These results indicate a long-term relationship between variables in the model so that the VAR model can be combined with the Error Correction Model into a Vector Error Correction Model (Table 4).

Table 4. The results of the cointegration Johansen Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.354771	169.7958	117.7082	0.0000
At most 1 *	0.328951	115.4652	88.80380	0.0002
At most 2 *	0.195614	65.99998	63.87610	0.0328
At most 3	0.129467	39.00820	42.91525	0.1165
At most 4	0.118486	21.81560	25.87211	0.1474
At most 5	0.048598	6.177468	12.51798	0.4381

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The exchange rate in the long term has a negative effect on Islamic banking investment financing. This result means that an increase in the exchange rate will reduce Islamic banking investment financing. The condition when the Rupiah exchange rate weakens can be used to boost exports as much as possible. Export-oriented business people enjoy increased exports due to low exchange rates (Aluko & Ajayi, 2018). The products they market in the global market are cheaper for products from other countries to increase sales volume (Jussani et al., 2018). Besides, if the rupiah exchange rate depreciates, the production of goods or services produced by that country will become more expensive. As a result, the demand for products or services will decrease and lead to substitutions that suppress demand. When demand decreases, producers will reduce supply and have a new balance. Reduction in supply is carried out by reducing production can causes the economy to experience a slowdown (Kudrin & Gurvich, 2015). The need for funds for working capital and investment is reduced, which in the end is that Islamic banks experience difficulties in channeling financing (Tohirin & Husaini, 2019).

In the long run, interest rates have a positive effect on Islamic banking investment financing. This means that the higher the Bank Indonesia interest rate, the higher the investment financing for Islamic banking. The Bank Indonesia interest rate is the reference interest rate for conventional banks because there is no Islamic bank reference regulation for the profit-sharing price. When interest rates rise, it will increase lending rates (Matemilola et al., 2015). The quite aggressive interest rate hike has created a negative sentiment for conventional banks because high-interest rates can erode the bank's net interest margin. However, on the other hand, this condition provides fresh air for Islamic banking (Nasution & Ahmed, 2015). This is because Islamic banks do not depend on reference interest, but rather determine profit sharing based on customer portfolios. Investment financing is long-term financing, so customers prefer sharia banking that uses a profit-sharing rate of funding and has been established at the beginning of the financing agreement so that it is fixed and not floating (Sapuan, 2016; Trisanty, 2018). Increasing the level of financing profit sharing will increase the volume of financing on investment.

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Table 5. VECM Estimation Results

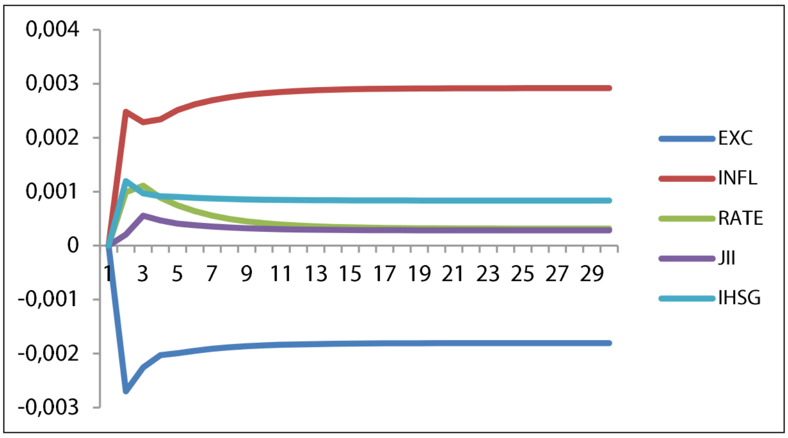
Variable	Coefficient	[t-statistic]
Short Term		
CointEq1	-0.000255	[-0.05298]
D(INV(-1))	-0.093844	[-1.02211]
D(EXC(-1))	-0.087774	[-1.58831]
D(INFL(-1))	0.181596	[0.79247]
D(RATE(-1))	0.227127	[0.43943]
D(JII(-1))	-0.074999	[-0.52786]
D(IHSG(-1))	0.093589	[0.61726]
C	0.019320	[6.94394]
Long Term		
EXC(-1)	-2.540463	[-2.39877]*
INFL(-1)	-20.49312	[-4.19129]*
RATE(-1)	25.44722	[2.53998]*
JII(-1)	-0.731490	[-0.45692]
IHSG(-1)	1.835033	[1.10180]

*significant at 5%

Long-term inflation has a negative effect on Islamic banking investment financing. This means that the higher the inflation, the lower the Islamic banking investment financing. The negative relationship between inflation and investment financing is following the theory because when the inflation rate increases, the price of goods will increase which results in the input value of producers to swell, exacerbated by decreasing public purchasing power so that the ability of customers to carry out obligations in financing will reduce (Aysan et al., 2018; Coibion et al., 2020; Joshi & Rahman, 2015). Islamic banking will limit the amount of money in circulation, among others, by restricting investment financing (Alam et al., 2017; Wahyudi & Sani, 2014). Inflation can be understood as an increase in the price of goods and services in a sustainable manner from year to year (Bahloul et al., 2017). In the economic concept, the inflation rate has an essential role because it can be used as a reference for estimating the real value of the investment (Naifar, 2016). Besides, the inflation rate is also often used as a reference for calculating and predicting the amount of return required to maintain the investment standard of Islamic banking (Hossain, 2016; Sasmal, 2015).

Impulse response function (IRF) analysis is used to see the response of a variable in the event of a shock to an endogenous variable caused by another endogenous variable within one standard deviation. This study uses thirty months to see the response and stability period of Islamic banking investment financing to shocks that occur. Shocks from the exchange rate (EXC) of one standard deviation in the first month have not been responded to by Islamic banking investment financing. In the following month, Islamic banking investment financing began to react negatively to shocks from the exchange rate of -0.0027 percent. The shock caused a decrease in Islamic banking investment financing by 0.0027 percent, continued to be responded negatively until the end of the observation, and began to stabilize in the 18th month of -0.00181 percent. These results indicate that exchange rate shocks during 30 months caused a decline in Islamic banking investment financing by an average of 0.00182 percent.

Figure 1. Impulse response function for investment financing



The increase in bank interest rates was responded negatively because of concerns over the company's financial liquidity. This is, of course, related to the costs incurred and the possible systemic impact. The use of imported raw materials used by companies in managing investments provided by Islamic banking is one of the causes of the negative response by Islamic banking (Setiawan, 2018). When the price of raw materials increases due to the depreciation of the rupiah, it will reduce the use of imported raw materials so that the investment capitalization value decreases. The high exchange rate movement will raise expectations of business actors, especially those engaged in export-import (Lin et al., 2018). The uncertainty of the exchange rate will create anxiety among business actors regarding their business losses (Hossain, 2016).

Shocks from inflation (INFL) of one standard deviation in the first month have not been responded to by Islamic banking investment financing. The following month, Islamic banking investment financing began to react positively to shocks from inflation of 0.00248 percent. This shock caused an increase in Islamic banking investment financing by 0.00248 percent, continued to be responded positively until the end of the observation, and began to stabilize in the 19th month of 0.002912 percent. These results indicate that during the 30 months, the inflation shock caused an increase in Islamic banking investment financing by an average of 0.0027 percent. Inflation is often a threat to the economy. The high rate of inflation can even lead to the collapse of a country's economy (Siami-Namini & Hudson, 2019)as a proxy for monetary policy, makes a proportionate contribution for setting a binding national target for reducing income inequality. The paper examines the existence of a linear or nonlinear effect of inflation and sectoral economic growth on income inequality

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using a balanced panel data of 92 developing countries for the period of 1990–2014. Design/methodology/approach: Methods section includes several steps as below: first, the functional form of the model using panel data for investigating the contribution of economic sectors in income inequality; second, to estimate the relationship between income inequality and sector growth: testing the Kuznets hypothesis; third, to estimate the relationship between inflation and income inequality base on general functional form of the model proposed by Amornthum (2004. The impact of inflation on the economy, in general, tends to be negative (Bahloul et al., 2017). Not only does it decrease the value of money, but it also affects saving and even investment (Godil et al., 2020). The hope of getting high returns, inflation risks eroding the return on investment in Islamic banking. Inflation does not always have a negative effect (Trad et al., 2017). There are also positives. The positive effects of inflation are felt by those who are debtors and entrepreneurs. For debtors, inflation makes money returned has a lower value than when borrowed. Meanwhile, for entrepreneurs, the existence of inflation allows them to obtain higher income than the production costs incurred (Hossain, 2016) Bangladesh, Egypt, Indonesia, Iran, Malaysia, Pakistan, Saudi Arabia, and Turkey. Although it has a positive effect, in general, and in a broader scope, the negative impact of inflation tends to be more, even potentially endangering the stability of Islamic banking investment financing (Mertzanis, 2016).

Shocks of interest rates (RATE) of one standard deviation in the first month have not been responded to by Islamic banking investment financing. In the following month, Islamic banking investment financing began to react positively to shocks from the interest rate of 0.000991 percent. The shock caused an increase in Islamic banking investment financing by 0.000991 percent, continued to be responded positively until the end of the observation, and began to stabilize in the 21st month by 0.000319 percent. These results indicate that during 30 months, interest rate shocks led to an increase in Islamic banking investment financing by an average of 0.0004299 percent. The shocks that occur affect the behavior of Islamic banks in channeling their investment financing (Hamza & Saadaoui, 2018). Islamic banking tends to increase its investment financing. When viewed from the characteristics of Islamic banking, which implements a profit-sharing scheme, of course, the shock is not very visible (Abdullah, 2017). However, Islamic banking cannot be separated from interest rate risk (Louhichi & Boujelbene, 2016). This is because the market reached by Islamic banking is not only customers with high loyalty, but also those with low commitment to Islamic banking (Salman & Nawaz, 2018). When the profit-sharing rate for Islamic banking is lower than the interest rate, customers will transfer their funds from Islamic banks to conventional banks (Kabir et al., 2015). This resulted in a reduction in investment financing carried out by Islamic banking.

Shocks from the Islamic stock index (JII) of one standard deviation in the first month have not been responded to by Islamic banking investment financing. In the following month, Islamic banking investment financing began to react positively to shocks from the Islamic stock index of 0.000205 percent. This shock caused an increase in Islamic banking investment financing by 0.000205 percent, continued to be responded positively until the end of the observation, and began to stabilize in the 19th month of 0.000284 percent. These results indicate that during 30 months, the Islamic stock index shocks caused an increase in Islamic banking investment financing by an average of 0.0003021 percent. Shocks from the composite stock price index (IHSG) of one standard deviation in the first month have not been responded to by Islamic banking investment financing. In the following month, Islamic banking investment financing began to react positively to the shock of the composite stock price index of 0.001196 percent. This shock caused an increase in Islamic banking investment financing by 0.001196 percent, continued to be responded positively until the end of the observation, and began to stabilize on the 15th month of 0.000839 percent. These results indicate that during 30 months, the interest rate shock caused an increase in Islamic banking investment financing by an average of 0.0008356 percent. The composite stock price index is an indicator that shows the movement of shares as a whole in a period (Naifar, 2016). This index functions as an indicator of market trends, meaning that the index's progress describes market conditions at a time whether the market is active or sluggish (Godil et al., 2020). When the value of the composite stock price index increases to a higher level, it indicates that it is active (Li, 2016). This condition is used by Islamic banking to increase the distribution of investment financing to productive sectors so that it will increase the value of investment capitalization in that sector (Bayraktar, 2014).

Forecast Error Variance Decomposition (FEVD) analysis in this study aims to explain each variable's contribution in explaining the diversity of Islamic banking investment levels. In this study, a period of 30 months was used. The FEVD results show that the most significant contribution in explaining the diversity of levels of Islamic banking investment financing comes from inflation. This indicates that inflation has the most significant contribution in causing investment financing compared to other variables. Besides, there are indications that inflation directly affects the level of Islamic banking investment financing. To a small extent, inflation also has a detrimental effect on assets. Inflation has the same impact on all types of assets, both liquid, and non-liquid. However, liquid assets tend to be more vulnerable to inflation.

If the inflation rate is high, it can cause the value of liquid assets owned by individuals and businesses to decrease, likewise, with investment. Liquid investments include stocks, bonds, and mutual funds (Cai et al., 2016). This investment is also influenced by inflation. It's just that these types of investments have sufficient resistance to the onslaught of inflation because they generate returns in the form of higher profit sharing. That is one of the main reasons investors put their money in stocks, bonds, and mutual funds. Investors try to keep their savings safe from the effects of inflation. So that investment is not adversely affected by inflation, the profit-sharing rate must follow and even exceed inflation so that investors can get real returns. However, for investments with low-profit sharing, it is challenging to avoid inflation. Indeed, this does not happen in all-stock issuing companies. Therefore, Islamic banking must be observant and intelligent in reading and analyzing the company's performance that will be chosen to invest.

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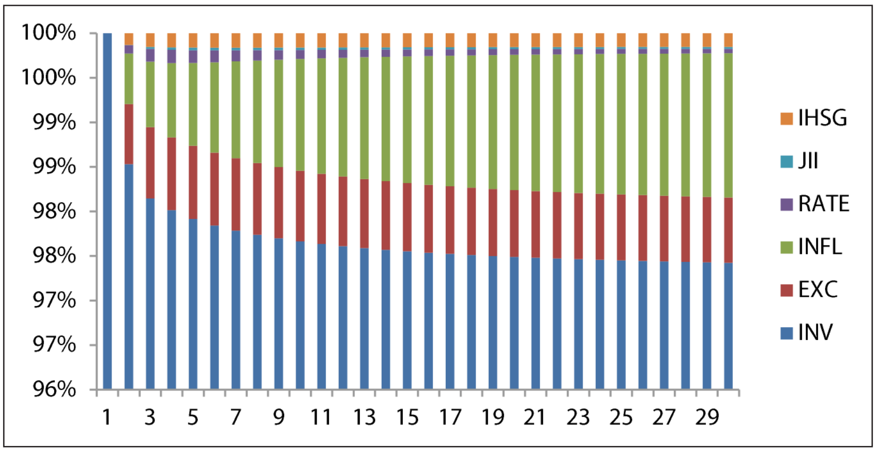
Figure 2. Forecast Error Variance Decomposition of Investment



Conclusion

This study's results indicate that none of them has an influence on investment financing in the short term. However, in the long run, the exchange rate, inflation, and interest rates have a significant impact on Islamic banking investment financing. The response of Islamic banking investment financing to shocks that arise is the fastest to reach stability when responding to shocks to the composite stock price index, exchange rates, inflation, Islamic stock index, and finally, interest rates. The variables that contribute the most to shaping the diversity of Islamic banking investment financing are inflation, exchange rates, composite stock price index, interest rate, and Islamic stock index.

This research result implies that Islamic banking should always pay attention to the movements of the exchange rate, inflation, and interest rates in determining investment-financing policies and maintaining financial stability by prioritizing potential sector investments. Besides, Islamic banking needs to increase its role in collecting funds from the public and simplifying the procedure for submitting investment financing for consumers. The government is also expected to be careful in setting interest rates, maintain exchange rate stability and inflation, and maintain stock market conditions.

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Risk Appetite and Investment Behavior: A Study on Indonesia Muslim Investors

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Abstract. *It has been nine years since the Indonesia Stock Exchange established a system called Syariah Online Trading System (SOTS), but the number of investors using this system is still relatively small compared to the regular investor. Moreover, the number is much smaller if it is compared to the potential number of sharia financial markets. This study aims to describe the behavior of Muslim investors in Indonesia who use the regular stock account instead of the sharia account. We surveyed by using both offline and online questionnaires, whereby the investors were asked to compose the imaginary stock portfolios consisting of stocks and their weights. Using a convenience sampling method, we succeeded in interviewing 85 respondents spread across Indonesia. The results of this study show that the risk appetite of Indonesian Muslim investors is risk-averse, and they consider sharia aspects in their investment decision. Nonetheless, the compliance to sharia varies among them. Hence, Indonesian Muslim investors cannot be seen and be treated as a homogenous group.*

Keywords: *investor behavior, Muslim investors, risk appetite, sharia compliance, stock market*
JEL Classification: G12, G15, G33

Abstrak. *Sudah menginjak tahun ke-sembilan semenjak Bursa Efek Indonesia meluncurkan sistem bernama Syariah Online Trading System (SOTS), namun jumlah investor syariah masih terhitung sangat sedikit bila dibandingkan dengan investor regular. Terlebih bila dibandingkan dengan potensi pasar keuangan syariah. Penelitian ini bertujuan untuk menggambarkan perilaku investor saham Muslim Indonesia yang menggunakan akun saham reguler. Kami melakukan survei menggunakan kuesioner daring dan luring kepada para investor. Investor diminta menyusun portofolio imajiner. Pengambilan sampel dilakukan dengan teknik convenience sampling dan kami mengumpulkan 85 responden dari berbagai daerah di Indonesia. Hasil penelitian menunjukkan bahwa preferensi risiko investor adalah risk averse, dan mereka memiliki pertimbangan terkait aspek kepatuhan terhadap pada aspek syariah dalam keputusan investasinya. Namun, seberapa patuh investor terhadap aturan syariah tersebut beragam. Maka dari itu, kelompok investor Muslim di Indonesia tidak dapat dipandang dan diperlakukan sebagai kelompok yang homogen.*

Kata Kunci: *pasar modal, perilaku investor, preferensi risiko, kepatuhan syariah, perilaku investor*

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Introduction

Muslims believe that Islam does not only regulate the relationship between them with God but also encompasses the teaching to apply sharia (Islamic laws) in all aspects of life (Siddiqui, 1994). According to the State of Global Islamic Economy Report in 2018-2019, as reported by the Indonesian Ministry of National Development Planning (Bappenas, 2019), Muslim populations reached 1.84 billion people worldwide, and approximately 3 trillion U.S. dollars estimate to be spent in the sharia-compliant spending or consumption by all Muslims by 2023. In Indonesia, the growth of Islamic investment is partly triggered by the financial crisis and the support from Islamic institutions such as MUI (Indonesian Ulema Council) through the enaction of regulation or fatwa, allowing investors to comply with Islamic values conducting investment decisions (Amin, 2017).

Sharia-compliant investment is an investment in instruments, such as stocks, which follow Islamic rules. For a stock to be sharia-compliant, it has to follow both qualitative and quantitative criteria set by the government of a particular jurisdiction. Several previous studies have discussed the research on stock screening (Abdul Rahman et al., 2010; Bellalah et al., 2013; Derigs & Marzban, 2008; Ho, 2015; Htay, Abedeen, & Salman, 2013; Ibrahim, 2015).

In a more specific topic on investment behavior, Tahir & Brimble (2011) conducted a study using an experimental design for comparing Muslim and non-Muslim investors in Brisbane, Australia. The sample of their study consists of 100 Muslims and 100 non-Muslim investors. They found that Islamic values affect the investment behavior of Muslim investors. However, the degree to which they affect behavior also influences the religiosity of each individual. Besides, among Muslim investors, they revealed wealth maximization behavior as in western investment behavior.

Other studies on Muslim investment behavior also conduct worldwide. Muhamad et al. (2006) show that religiosity level significantly affects Muslims' investment behavior in Malaysia. Nonetheless, the religiosity level can only explain the behavior by less than five percent. It also state that religion plays an essential role in investment decisions among Palestinian investors (Al-Afifi, 2013). When investing in foreign markets, Palestinian investors prefer sharia-compliant ones, such as financial assets in Arab countries.

Mansour & Jlassi (2014) added that religion influences risk perception, behavior, and investment management by using a qualitative approach. Religious investors do not show the same behavior as non-religious ones. Religion does not only affect the risk level to be taken by investors but also investment behavior. Some investors avoid non-sharia instruments because they are afraid of doing sinful acts. Hence, it is evident that religion plays a pivotal role in composing a portfolio consisting of financial assets. As religion affects financial decisions and investment, it finally affects the capital structure and values owned by a company.

Conversely, by using the Malaysian case, Jamaludin (2013) showed that religiosity does not significantly affect investment decisions, primarily in the investment of pension funds. In Indonesia's context, that result is supported by Asytuti (2016), stipulating that religiosity of a Muslim does not guarantee that he or she will select a halal instrument in the capital

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market. This idea is supported by Shahzad et al. (2014), revealing that religion does not affect Pakistani Muslim investors' behavior. They showed that religion only accounts for 7.09% of the total influence, and it is a part of the cultural aspect. Thus, religiosity, according to their studies, does not significantly affect the investment decision. Besides, religiosity cannot use to predict decision making among investors.

The number of studies of Islamic investment behavior is relatively minimal, primarily the ones conducted in Indonesia. This present study aims to fill the literature gap by investigating the behavior of Indonesian Muslim investors who use the regular account (not a specific sharia account) when investing in the capital market, primarily in stocks. Hence, this study investigates whether or not Muslim investors consider sharia aspects of their investment decision. Besides, we investigate their investment preference, whether risk-averse, risk-neutral, or risk lover. To do this, we utilized both the closed-ended questions and open questions. These are several novelties of this present study hoping that we can contribute to the literature of Islamic investment behavior.

Methods

This study is descriptive research using data of Indonesian Muslim investors. The data were collected using both offline and online questionnaires. The questionnaire of this study consists of three sections (sections A, B, and C). Section A contains questions regarding the respondents' demography or profile covering the type of investment account (regular or sharia), age, sex, domicile, religion, income, and latest education level.

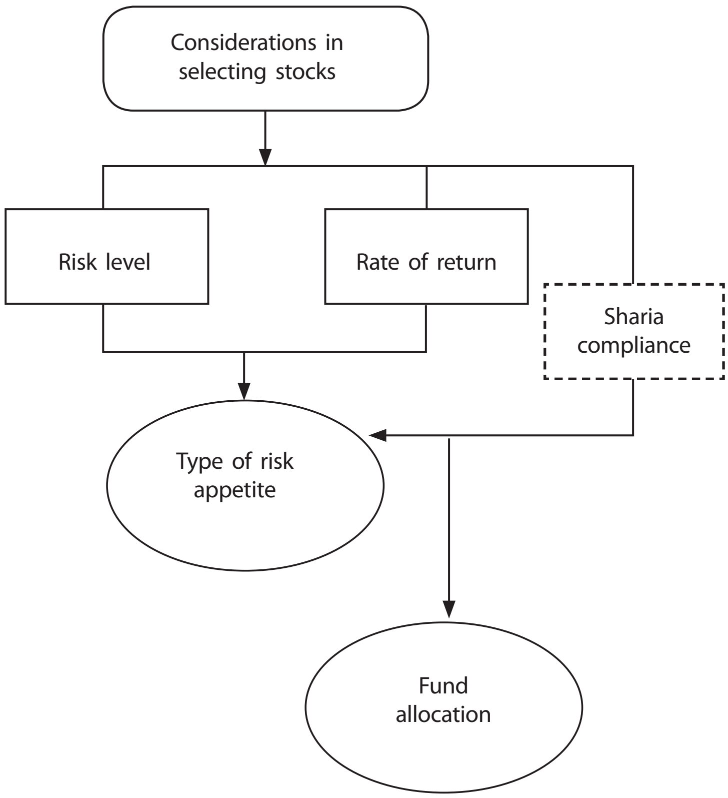
Section B comprises stocks' data whereby the investors are required to construct an imaginary portfolio from them. The investors ask to select five stocks with the fund's percentage or weight allocated to each stock. This section provided 24 stocks consisting of twelve Islamic stocks (included in ISSI) and twelve non-Islamic stocks (not included in ISSI but included in the LQ45 index). In addition to stock name or ticker, we provided other information of each stock, namely, three-month returns (August 2019 - November 2019), 12-month returns (November 2018 – November 2019), five-year returns (December 2013 – December 2018), five-year stock beta (December 2013 – December 2018) and sharia compliance status of each stock. We provided the beta data as the proxy of risk, which is the necessary information required to make investment decisions (Markowitz, 1952). The 24 stocks randomly select by omitting the stocks (companies) who conducted stock split (BBRI in 2017) and recorded an anomaly return (above 1000%) due to reverse stock split (BRPT and HMSP).

Section C of our questionnaire consists of three open questions. The first question asks why the investors select particular stocks while the second one asks whether they consider beta in their portfolio construction. The third question asks whether they consider Islamic principles when selecting the stocks to be included in their portfolios.

The dissemination of an offline questionnaire was conducted in December 2019 to the participants of an event, namely, "training and sharing of early-stage investors in the Bandung region." Before we disseminated the questionnaire, we explained the mechanism for answering the questions in the questionnaire. So, the participants would have a better understanding of the technical aspect. Having been explained, the respondents then filled the questions in a maximum of 40 minutes. Finally, each respondent put the filled questionnaire in an envelope to guarantee confidentiality.

Direct interview conduct due to three reasons. First, it is understandable that a direct interview will let respondents answer the questions carefully. Besides, the complicated terminologies could be asked directly to the questionnaire administrator (Iselin et al., 2008). Second, the direct interview has proven to have a higher response rate as referring to Tahir & Brimble (2011). Third, through a direct interview, we could obtain direct, spontaneous, and incidental responses to support and explain the empirical results (Mia & Clarke, 1999).

Figure 1. Research framework



To obtain a broader range of respondents, we also disseminated an online questionnaire through Google Form in December 2019 until February 2020. The questionnaire link was sent through online media such as Instagram, Line, WhatsApp, and Twitter. We also shared the link to the investment community groups based in Bandung city and across Indonesia. The online questionnaire is superior for its speed and coverage (Kannan et al., 1998) and provides more flexibility so that the respondents can fill it at any time and place (Hogg, 2003). Finally, an online questionnaire is cost-efficient (Evans & Mathur, 2005). This study's sampling technique is convenience sampling, allowing us to practically

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select respondents who are following specific criteria (Dornyei, 2007). Based on both offline and online questionnaire, we obtained answers from 148 investors across Indonesia. We then conducted selection by using several criteria, namely, Indonesian nationality, Islam by religion, and investors using the regular account. Finally, we obtained 85 usable questionnaires based on those criteria.

To attain the research objectives, we utilize descriptive statistics with the features as follows. First, we use the table of the frequency distribution for both the relative category and relative groups. The frequency distribution table for the relative category divides the observed data into several categories while the table of the frequency distribution for relative groups splits the observed data into interval classes. The interval classes are needed if the data category is numerous. Besides, the interval classes are shown in percentage to make it easier to understand.

Second, we utilize the minimum (min), and maximum (max) features to see the range of the observed data. The range is simply obtained by subtracting the max by the min (R=x_t-x_r). Third, we also use the mean and standard deviation of the obtained data. Finally, the scatter diagram is used to portray the risk preference of the respondents in this study. This scatter diagram shows two axes where the x-axis shows the risk while the y-axis shows the return. The research process in this study follows the framework in Figure 1.

Result and Discussion

The final respondents of this study are 85 investors from various cities in Indonesia. The demography of those 85 investors shows in Table 1. Table 1 shows that most of the respondents are young investors aged 18 to 26 years old (72%). They are mostly male investors (84%) and live in cities of West Java province (51%). Most of them have a relatively small monthly income ranging from one to four million rupiahs (40%). Most of the respondents are high school (41%) and bachelor degree graduates (41%) in terms of educational background. Therefore, we could summarize that most of our study respondents are young or early-stage Muslim investors.

Table 1. Demography of Respondents

Variable	Frequency	Percentage
Age		
18-26	61	72%
27-35	13	15%
36-45	9	11%
46-55	2	2%
Total	85	100%
Sex		
Male	71	84%
Female	14	16%
Total	85	100%

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Variable	Frequency	Percentage
Domicile		
Jakarta	7	8%
Banten	1	1%
West Java	43	51%
Central Java	11	13%
East Java	9	11%
Yogyakarta	1	1%
Others (outside Java)	13	14%
Total	85	100%
Monthly Income		
Less than IDR 1,000,000	23	27%
IDR 1,000,000 to 4,000,000	34	40%
IDR 4,000,001 to 7,000,000	9	11%
IDR 7,000,001 to 10,000,000	12	14%
More than IDR 10.000.000	7	8%
Total	85	100%
Latest Education		
High school	35	41%
Diploma	7	8%
Bachelor's degree	35	41%
Professional degree	1	1%
Master's degree	7	8%
Total	85	100%

Source: processed data (2020)

Return and risk of the stocks selected by our respondents are measured by their mean, standard deviation, five-year return, and five-year beta as a proxy of risk. Table 2 shows the results of risk and return.

Table 2. Descriptive statistics of risk and return

Variable	N	Range	Minimum	Maximum	Mean	SD
Five-Year Return	85	8.81	-0.71	8.10	1.51	2.19
Five-Year Risk	85	13.40	-3.13	10.27	1.98	2.57

Source: processed data (2020)

From Table 2, we can see that there are very few Muslim investors who selected stocks with negative returns (-0.71), but most of them selected the stocks with a positive return. To obtain the portrayal of the stocks selected by investors, we mapped the 24 stocks into four scatter diagrams based on the closeness of those stocks to each other. Thus, relatively close stocks can make a particular pattern.

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Figure 2. Stocks in group 1

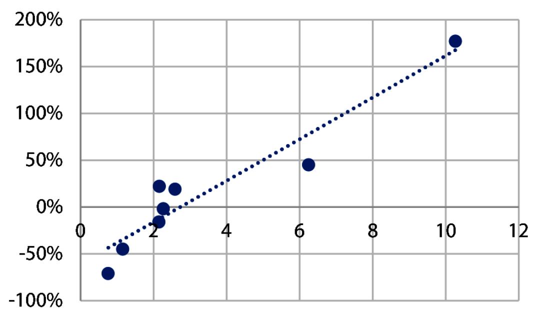
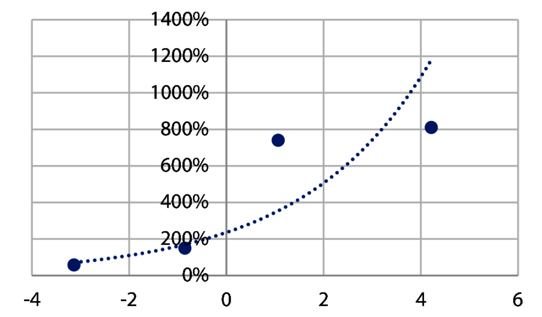


Figure 3. Stocks in group 2



Source: processed data (2020)

Figure 3 shows the scatter diagram of risk and return consisting of eight stocks (ANTM, INDY, ITMG, JSMR, MEDC, MNCN, PGAS, WIKA) while Figure 4 shows the scatter diagram of other four stocks (ERAA, INKP, SRIL, TKIM). Figure 2 and Figure 3 show a positive relationship between the two variables (risk and return), as shown by the positively correlated line. This result is also similar to the case of other stocks selected by our research respondents, as shown in Figure 4 and Figure 5, as follows.

Figure 4. Stocks in group 3

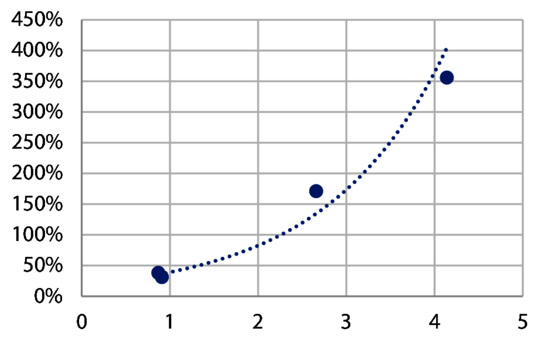
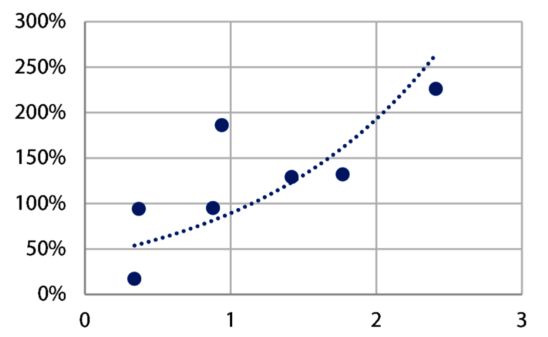


Figure 5. Stocks in group 4



Source: processed data (2020)

Figure 4 shows the scatter diagram of risk and return of four stocks (ASII, BBNI, INDF, WSKT), while Figure 6 shows the scatter diagram of eight stocks (BBCA, BBTN, BMRI, GGRM, ICBP, JPFA, UNVR) selected by our respondents. Based on the four diagrams above, we can see that our study respondents have risk-averse behavior. Markowitz (1952) states that investors with risk-averse behavior will compile stock portfolios to obtain a certain level of return by accepting a certain level of risk. It can also be said that to get the desired rate of return, investors will accept the same risk as long as it is appropriately measured. Our respondents' risk-averse behavior indicates a possibility that there are considerations of sharia aspects in their investment decisions. As taught in the Holy Quran, Islam limits its adherents to participate in financial activities that are too high risk and do speculation or gambling practices (Bartke & Schwarze, 2008).

To further investigate the consideration of the sharia aspect in an investment decision, we identified the percentage of funds allocated in both sharia and non-sharia aspects by our respondents. As shown in Table 3, we can see that 70.96% of funds in all respondents' imaginary portfolio would be invested in sharia stocks. Besides, only 1.32% of our respondents would allocate their funds in the cigarette company, i.e., non-sharia compliant. Subsequently, Table 4 shows that 36.47% of respondents selected only the Islamic stocks (100%) in their stock portfolio. The rest of the investors have varied compositions in the constructed portfolio. It shows that majority of respondents consider sharia aspects of establishing an investment portfolio. This result follows previous studies (Tahir & Brimble, 2011; Muhamad et al., 2006; Al-afifi 2013; Mansour & Jlassi, 2014; and Septyanto et al., 2017). The number of Islamic stocks included in a portfolio shows evidence that the compliance level among Muslim investors in Indonesia varies. This result supports the study of Tahir & Brimble (2011). However, this study's finding differs from some earlier studies (Asytuti, 2016; Jamaludin, 2013; Shahzad et al., 2014).

Table 3. The asset allocation of Islamic stocks and non-Islamic ones

Firm	Sector	N	Percentage
Panel A: Sharia stocks			
Aneka Tambang Tbk. (ANTM)	Mining	19	6.271
Astra International Tbk. (ASII)	Miscellaneous industry	20	6.601
Erajaya Swasembada Tbk. (ERAA)	Trading, service, and investment	7	2.310
Indofoof CBP Sukses Makmur Tbk. (ICBP)	Consumer goods	33	10.891
Indofood Sukses Makmur Tbk. (INDF)	Consumer goods	16	5.281
Indo Tambangraya Megah Tbk. (ITMG)	Mining	11	3.630
Japfa Comfeed Indonesia Tbk. (JPFA)	Basic industry and chemical substances	17	5.611
Jasa Marga (Persero) Tbk. (JSMR)	Infrastructure, utility, and transportation	10	3.300
Media Nusantara Citra Tbk. (MNCN)	Trading, service, and investment	11	3.630
Perusahaan Gas Negara Tbk. (PGAS)	Infrastructure, utility, and transportation	9	2.970
Unilever Indonesia Tbk. (UNVR)	Consumer goods	43	14.191
Wijaya Karya (Persero) Tbk. (WIKA)	Property, real estate, & building construction	19	6.271
Total (Panel A)		**215**	**70.96**
Panel B: Non-sharia stocks			
Bank Central Asia Tbk. (BBCA)	Finance	28	9.241
Bank Negara Indonesia (Persero) Tbk. (BBNI)	Finance	10	3.300
Bank Tabungan Negara (Persero) Tbk. (BBTN)	Finance	2	0.660
Bank Mandiri (Persero) Tbk. (BMRI)	Finance	7	2.310
Gudang Garam Tbk. (GGRM)	Consumer goods	4	1.320
Indika Energy Tbk. (INDY)	Mining	5	1.650
Indah Kiat Pulp & Paper Tbk. (INKP)	Basic industry & chemical substances	7	2.310
Medco Energi Internasional Tbk. (MEDC)	Mining	4	1.320
Semen Indonesia (Persero) Tbk. (SMGR)	Basic industry and chemical substances	0	0
Sri Rejeki Isman Tbk. (SRIL)	Miscellaneous industry	4	1.320
Pabrik Kertas Tjiwi Kimia Tbk. (TKIM)	Basic industry and chemical substances	7	2.310
Waskita Karya (Persero) Tbk. (WSKT)	Property, real estate, and building construction	10	3.300
Total (Panel B)		**88**	**29.04**
Total (Panel B)		**292**	**100**

Source: processed data (2020)

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This qualitative result has resulted from the open-ended questions in our questionnaire. In terms of sharia compliance, 37% of respondents answered that the sharia aspect considers making a stock portfolio. It bases on several reasons. First, investors want to get tranquility in their investment, and second, they want to know the performance of those ethical companies. Third, they want to invest their fund in companies providing multi-benefits in society. This result indicates that religious values play a significant role in Muslim investors' investment activities, as has been found in Saudi Arabia (Almansour, 2019).

Table 4. Portfolio Consisting of Islamic Stocks

Islamic stocks	Percentage of respondents
Portfolio consisting of <25% Islamic stocks	2.35%
Portfolio consisting of 25%-50% Islamic stocks	28.24%
Portfolio consisting of 51%-75% Islamic stocks	25.88%
Portfolio consisting of 76%-99% Islamic stocks	7.06%
Portfolio consisting of 100% Islamic stocks	36.47%
Total	100%

Source: processed data (2020)

However, not all of our respondents answered that the sharia aspect is in their investment considerations. The number of investors answered so is 29%. They perceived that the aspect of sharia is not essential and not need in constructing a portfolio. It is because sharia compliance does not affect the profitability of investment activities. This result demonstrates that several Muslim investors in Indonesia also follow the western style of investment; this also states in a previous study (Tahir & Brimble, 2011). Our finding also shows that 34% of respondents had a lack of understanding of sharia. Some investors cannot differentiate clearly between the sharia and non-sharia stocks. They do not possess sufficient knowledge about the sharia aspects in selecting stocks.

From the open questions, we found that not all Muslim investors in Indonesia consider sharia compliance an essential variable in their investment decisions. Besides, their understanding of sharia varies from one to another. Although the sharia aspect is essential in a Muslim's investment, not all Muslim investors obey this principle. Moreover, they do not have adequate knowledge of sharia compliance. Therefore, we can summarize that Indonesian Muslim investors cannot treat as a homogeneous group.

As this result has several limitations, we provide some suggestions for further studies. Further research may increase the number of investors so that the result will be more informative. Further researchers may also use other experimental methods and compare between Muslim and non-Muslim investor groups and observe other financial investment opportunities, such as bitcoin, as has been recently conducted in Malaysia (Ayedh et al., 2020).

Conclusion

This present study aims at identifying the behavior of Muslim investors in Indonesia. Based on the results of this study, we can conclude the following. First, the risk appetite of our respondents using regular accounts is risk-averse. It means that in constructing a portfolio, they are willing to pay more risk as long as a higher level of return compensates them. Second, in Indonesia, Muslim investors perceive that sharia compliance is an essential aspect of making a stock portfolio. However, the degree varies among them. Besides, some of the investors disobey the sharia aspect because it does not affect the return. Therefore, we can summarize that Indonesian Muslim investors cannot treat as a homogeneous group.

Based on the results of this study, we provide suggestions as follows. First, regulators and security companies need to hold more socialization and training sessions about the Islamic stock market. Social media can choose because people use it more intensively today. It expects that the Islamic financial literacy of Indonesian Muslims will improve. Furthermore, the approach that needs to be taken by security companies in targeting Indonesian Muslim investors should be accommodating. It means the current investment service, which provides regular and sharia accounts, is already on the track. It is because not all Indonesian Muslims will only select Islamic stocks in their investment decisions.

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How Are Investors Attracted to Islamic Companies in Indonesia? Study on The Effect of Leverage, Liquidity, and Profitability on The Rating of *Sukuk*

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Abstract. *The rating of Sukuk becomes the reflection of the capital markets' activities. The better rating of Sukuk, the more investor is interested in purchasing a Sukuk. This study aimed to examine the effects of leverage, liquidity, and profitability on Sukuk's rating. The technique of data analysis employed was ordinal logistic regression. The research result revealed that the leverage and liquidity affected the Sukuk. Meanwhile, the profitability did not affect the rating of Sukuk. The test result simultaneously showed that the leverage variable and liquidity affected the Sukuk rating. Overall, this study's research result supported the previous research that discovered the impacts of leverage and liquidity variables on Sukuk's rating. The implication is that companies should improve their leverage and liquidity performance to improve the bond rating.*

Keywords: *leverage, liquidity, profitability, sukuk*

JEL Classifications: G1

Abstrak. *Rating sukuk menjadi salah satu cerminan kegiatan di pasar modal. Semakin baik rating suatu sukuk, investor akan semakin tertarik untuk membeli. Penelitian ini bertujuan untuk menguji pengaruh leverage, likuiditas, dan profitabilitas terhadap rating sukuk. Teknik analisis data yang digunakan ialah regresi logistik ordinal. Hasil penelitian menunjukkan bahwa leverage dan likuiditas berpengaruh terhadap rating obligasi syariah. Sementara itu, variabel profitabilitas tidak berpengaruh terhadap rating obligasi syariah. Semakin tinggi leverage dan likuiditas suatu perusahaan, maka semakin baik rating obligasinya. Hal ini berimplikasi pada kebijakan perusahaan untuk memperbaiki kinerja leverage dan likuiditasnya sehingga mampu meningkatkan rating obligasinya. Hasil uji simultan menunjukkan bahwa variabel leverage dan likuiditas berpengaruh terhadap rating obligasi. Secara keseluruhan, hasil penelitian ini mendukung penelitian-penelitian sebelumnya yang menunjukkan adanya pengaruh variabel leverage dan variabel likuiditas terhadap rating obligasi syariah.*

Kata Kunci: *leverage, likuiditas, profitabilitas, rating obligasi syariah*

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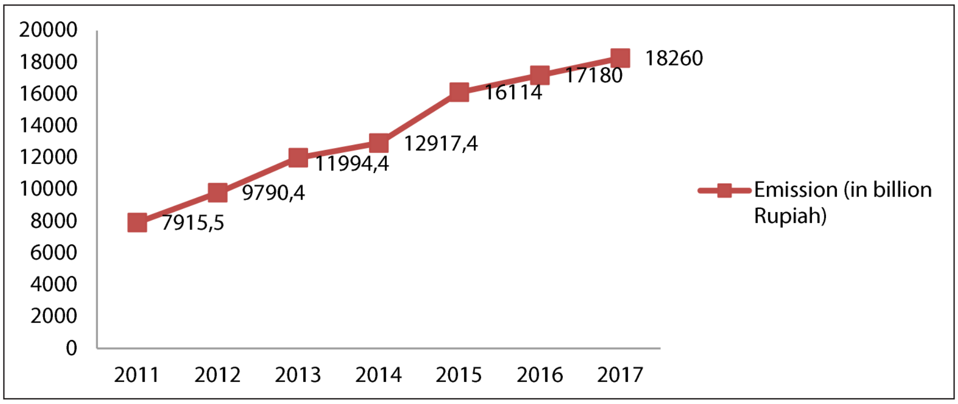
Introduction

One of the constraints faced by companies in Indonesia to expand the business activities was dealing with funding. The resource funding of a company consists of internal and external funding. The root of internal funding may be from the remaining operational profit. This resource is such the most accessible alternative funding at an inexpensive cost. If the internal funding were not available, the financial manager would try to seek other funding obtained from the external sources by issuing a debenture or stocks in a capital market (Raffestin, 2017; Najeeb et al., 2017). Meanwhile, deciding on using a specific funding source is one of the most important financial management (Honková, 2015; Reboredo & Naifar, 2017; Smaoui et al., 2020).

Issuing securities through the capital market makes the Indonesian stock exchange significantly grew from IDR 2.73 billion in 1977 to IDR 6,870.7 trillion in 2018. This data was also supported by investors' business activities, which reached 43 thousand investors per day (Arief, 2018). Aside from the trading volume, which was significantly increasing, the type of securities held for trading in the stock exchange is also developing. Indonesian Stock Exchange Inc. (BEI) has commenced a capital market, particularly for sharia investment, part of sharia finance. One of the sharia products that attract investors is Sukuk. Sukuk has a significant potential to evolve as innovative Islamic financial instruments that obey the sharia principles (Ahmed et al., 2014; Haji Wahab & Naim, 2020; Zakaria et al., 2012a).

The issuance of Sukuk in Indonesia had embellished the capital market, starting in 2002 and placed as the second biggest in East Asia (Pribadi & Wibowo, 2019; Wilson, 2008). The emission of Sukuk in Indonesia is always increasing from time to time. In 2011, the total emission of Sukuk was as significant as 791.5 billion. While in 2017, the total reached 18.260 billion or increased as big as 130,69% since 2011. The average increase in the total emission of Sukuk in Indonesia was as significant as 15,26%. This condition reveals the higher demand for Sukuk in Indonesia. The following is the data on the growing emission of Sukuk in the past several years.

Figure 1. The Growth of Emission of Sukuk in Indonesia



Source: Data managed by the researcher (2020)

One of the guidelines in making an investment decision is on Sukuk's rating, which can categorize into investment and non-investment ranking (Melzatia et al., 2019; Zakaria et al.,

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2012a). Information related to Sukuk's ranking becomes essential as it provides informative statements and signals the probabilities of default risk. The better the ranking of Sukuk, the higher the rating's publisher's capability in paying their debts off (IBPA, 2010).

Although the ranking can use as the investors' reference to choose the Sukuk, it was not absolute. There is a doubt in Sukuk's ranking if a company label with grade investment faces a default risk as happened to PT Mobile-8 Telecom Tbk. That issued Bond I Year 2007. This company experienced a default risk two times for the coupon of 15 March 2009 and 15 June 2009 with a significant rating of Rp 675 billion, which was due in March 2012 (Baswir, 2010). Per June 2008 and 2009, the ranking of PT Mobile-8 Telecom Tbk's rating in Indonesia Bond Market Directory was idBBB+. Per June 2010, the ranking downgrade to idD.

Several methods measure the company performance in the Sukuk ranking lenses, such as leverage, liquidity, and profitability (Nagano, 2016)(Lai et al., 2017). Leverage shows a warranty given to a self-fund upon the debt received by a company, and it can read as the comparison of funding between the foreign parties and the company's, which include in the company (Renaldi et al., 2020). The leverage ratio measures the capability of a company to fulfilling the long-term obligation. The higher the ratio, the bigger the risks faced by the investors. Thus they expected high return.

Liquidity demonstrates a company's competence in accomplishing the short-term financial obligation on time (Pebruary, 2016). Companies with small liquidity levels consider not-liquid to reduce the company's value and impacts the investors' lack of interest to invest in that company as the immense obligation of debt (Rely & Arsjah, 2018). The higher the liquidity ratio, the Sukuk rating will be better. A company with high current assets shows its better capability in paying the debts off (Hanafi, 2004).

Profitability measures how big a company's capability in earning profits, whether in the extent to trading, assets, and profit for self-funding (Barakat, 2014). The profitability ratio measured by return-on-assets positively influences the increase of profit as this ratio measures the capability of a company to earn the net profit according to a particular asset's level (Sejati, 2011). When the profit of a company is high, the rank of the Sukuk will remain respectively high.

Researchers had carried out research related to financial performance factors and their influence on bond rating in Indonesia. Meanwhile, research that focuses on the rating of Sukuk is still limited. Pebruary (2016) found that the ratio of profitability, liquidity, and leverage had a significant effect on Sukuk's rating. Arisanti et al. (2014) find that liquidity had a significant effect on Sukuk's rating. Meanwhile, Pranoto et al. (2015) find that profitability did not significantly influence Sukuk's rating.

Other studies related to the Sukuk do not focus on the rating of Sukuk. Bhuiyan et al. (2018) compare the Sukuk with conventional bonds from an advantage perspective. The study finds that the Sukuk market offers sufficient portfolio diversification opportunities for fixed income investors of the mentioned sample countries. In his writing on the Sukuk, Saad et al. (2016) explained that monitoring role and voting rights decisions by owning broad ownership of shareholding in the company has a relationship with Sukuk issuances default risks for conventional bonds. Likewise, Ahmed et al. (2014), in his research-highlighted Sukuk in terms of its advantages compared to bonds, the advantage of Sukuk is that they are compliant with shariah principles. Sukuk is, therefore, attractive investment instruments for Islamic financial institutions, shariah managed funds, and takaful Islamic insurance companies that cannot invest in conventional securities that involve payment of interest or riba (Ahmed et al., 2014).

Melzatia et al. (2019) looked at the rating of Sukuk from the agency theory. The result indicates that the audit committee has a significant positive effect on Sukuk ratings, while the board of commissioners, institutional ownership, income smoothing, profitability, and asset growth has no significant effect on Sukuk ratings. In Malaysia's research, financial leverage negatively relates to financial measures and Sukuk's rating (Elhaj et al., 2015). Zakaria et al. (2012b) highlight from the perspective of the importance of the Sukuk rating. A Sukuk may promote default risk as a Sukuk also needs to undergo a credit rating assessment of its future payment prospects. Even though Sukuk issuance comes together with asset security, any negative migration of the credit rating assessment would indicate default risk.

The research above notes that few studies on the rating of Sukuk and the financial performance factors and any study found a different result for each other. Therefore, this paper wants to complement and re-examine within Indonesia's scope, with a period of 2015 - 2019, and with a broader sample, namely, 150 companies, taken thirty companies for one year, both in the corporate and financial sectors. This paper directs his study on leverage, liquidity, and profitability on the Sukuk rating in Indonesia.

Methods

This research is quantitative research with an associative approach that combined two or more variables such as independent variables comprising leverage (X1), liquidity (X2), and profitability (X3) and a dependent variable that is a rating of Sukuk (Y). This study's analysis technique consisted of two, as explained in the following: first, descriptive statistical analysis, calculating mean, minimum, and maximum standard deviations from each independent variable. Second, the hypotheses testing by using an ordinal logistic regression test. Ordinal logistic regression is one of regression analysis used to analyze the relationship between response and predictor variables, in which the response variable is polychotomous within ordinal scale. In this research, the logistic regression test conducts to determine each independent variable's effects on dependent variables. This logistic regression does as the dependent variable is of ordinal scale, while the independent variable uses a ratio scale. The ordinal regression model used in this study is a model by Ghozali, as stated in the following (Ghozali, 2013).

$$\text{Logit } (p_1+p_2+\ldots p_5) = \log = \alpha_1 + \beta'X$$

$$\text{Logit } (p_1 + p_2 + \ldots + p_4) = \alpha_1 + \beta_1 LE + \beta_2 CACL + \beta_3 NPATA$$

Explanation:

P: the probability ranking of sukuk AAA=1, AA=2, A=3, BBB=4, BB=5

LE: Liability/equity

CACL: Current asset/current liabilities

NPATA: Net profit after tax/Asset

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Steps of ordinal logistic regression analysis in this research comprise several parts: first, conducting an independency test between predictor and response variables with hypotheses as follows:

H_0: the relationship of variable Y and X toward-i is independent (free to each other)

H_1: the relationship of variable Y and X toward-i is dependent (not-free to each other).

Second, an ordinal logistic regression test conducts partially by engaging all predictor variables. Third, conducting an ordinal logistic regression test simultaneously by engaging predictor variables influential in the partial test stage. Fourth, conducting a model-fit test. Fifth, conducting a model-propriety test.

The population in this study comprises the companies that issued Sukuk on the Indonesian Stock Exchange (BEI), which were ranked by PEFINDO Inc. as big as 150 companies. The research sample was collected using non-probability sampling. Cook explained that non-probability sampling is a sampling technique without giving any probability or opportunity for each of the population to be chosen as the sample (Cook & DeMets, 2007).

Result and Discussion

The result of descriptive statistics reveals that the score of Sukuk's rating, leverage, liquidity, and profitability shows in Table 1. Table 1 shows that the minimum score was 0.150000; the maximum score was 25.00000, with an average of leverage as significant as 3.057586 and a standard deviation as big as 4.061928. Based on this data, the significant difference is between the lowest and highest leverage scored between 0.150000 and 25.00000. These scores showed that leverage increase.

Table 1. The Result of Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Leverage (X1)	150	0.150000	25.00000	3.057586	4.061928
Liquidity (X2)	150	0.010000	2.390000	1.143793	0.617911
Profitability (X3)	150	-0.130000	11.14000	1.707076	2.596001
Rating of sukuk (Y)	150	1.000000	4.000000	1.937931	0.883653
Valid N (listwise)	150				

Source: Data managed by the researcher (2020)

The minimum score of liquidity was as big as 0.010000, while the maximum score was 2.390000, with average score (mean) liquidity as significant as 1.143793 and a standard deviation 0.617911. According to this data, the significant difference lied between the lowest and highest liquidity ranging from 0.010000 to 2.390000. This result shows that the score of standard deviation was below the average of liquidity. This result means that the data variation or data deviations are considered little. The minimum score of profitability is -0.130000, and a maximum score is 11.14000, with an average profitability of as significant is 1.707076 and a standard deviation of 2.596001. It shows a significant difference between the lowest and highest profitability level ranging from -0.130000 to 11.14000. This score implies an increase in profitability.

The minimum score of Sukuk's rating was 1, while the maximum score was 4, with the average score of Sukuk's rating as big as 1.937931 and a standard deviation of 0.883653. According to this data, the significant difference between the lowest and highest Sukuk ratings, ranging from 1 to 4. This score implies the increase of Sukuk's rating and generally shows the growing interest of investors towards the capital market. According to the data, the standard deviation was still under the mean score of Sukuk's rating. The data revealed that the data variation or data deviation is considered small.

The result of the independency test between predictor and response variables shows in Table 2. The followings are the result of the independence test between predictor and response variables shown in Table 2. The independency test result showed that the p-value from the three variables was 0,000, which is less than the significant level of 5%. Therefore, it states that the three-predictor variables are related to the predictor variables. Meanwhile, if comparing each X2 count in each variable with X2 (0,05, df=252) = 290,0285, it can be concluded that the three predictors have a connection (not free to each other) towards the response variable.

Table 2. Independency test of predictor and response variables

Variables	Chi-square test statistics	P-Value	Decision	Explanation
Leverage	379.75	0.000	H_0 is rejected	Dependent
Liquidity	366.18	0.000	H_0 is rejected	Dependent
Profitability	299.64	0.000	H_0 is rejected	Dependent

Source: Data managed by the researcher (2020)

The following stage was conducting the ordinal logistic regression partially by engaging all predictor variables with the result that show in Table 3. Referring to Table 3, it can reveal that some variables are significantly affecting the predictor variables, which is leverage (X1) with p-value 0.001 and liquidity (X2) with p-value 0.00. On the other hand, the profitability variable gains a p-value as significant as 0.127. This number is bigger compared to the level of significance, which is 5%. Therefore, it can conclude that the profitability variable (X3) did not affect the Sukuk variable (Y). According to the result of the partial test above, it decides that the variables that are worth the next simultaneous ordinal regression test are leverage (X1) and liquidity (X2) variables towards the rating of Sukuk (Y).

Table 3. The Result of Partial Test

Variables	Estimation	Wald	P-value
Leverage	0.131	10.201	0.001
Liquidity	1.414	23.352	0.000
Profitability	0.097	2.325	0.127

Source: Data managed by the researcher (2020)

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Table 4 shows the result of the simultaneous ordinal logistic regression test on predictor variable that consists of leverage (X1) and liquidity (X2) towards the response variable that is the rating of Sukuk (Y). The simultaneous test results that engaged leverage and liquidity show that both variables have p-value 0.002 and 0.00. This number is lower than the significant level, which decides that it is 5%. This result means that leverage (X1) and liquidity (X2) variables have significant impacts on the variable of the rating of Sukuk (Y). The simultaneous test also reveals whether the model has been significant according to the response variables' influential factors.

Table 4. The result of the simultaneous test

Variable	Estimation	Wald	P-value
Y=1	1.621	13.794	0.000
Y=2	3.04	38.82	0.000
Y=3	6.124	71.382	0.000
Leverage	0.131	10.201	0.002
Liquidity	1.414	23.352	0.000

Source: Data managed by the researcher (2020)

According to Table 5, it can reveal that the result of the simultaneous test showed a significant value as big as 6.88051E-07. This value is bigger than the significant level decided that is 5%. Therefore, it could decide that H0 rejects, which means that the coefficient β is significant towards the ordinal logistic regression model.

Table 5. Ratio Likelihood Test

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	355.5840769			
Final	327.2052701	28.3788	2	6.88051E-07

Source: Data managed by the researcher (2020)

The following Table 6 reveals the result of the model-fit test. The model-fit test result can state that the analysis result is suitable for the empirical data and is proper to use. The result in Table 6 shows the model-propriety test with Pseudo R-square. The value of the McFadden determination coefficient showed value as significant as 1. Meanwhile, Cox and Snell's determination coefficient value showed a value of 0.907, and the Nagelkerke determination coefficient as significant as 1. The value of the Nagelkerke determination coefficient, which reached 1 or 100%, implies that leverage (X1) and liquidity (X2) 100% affected Sukuk's rating.

Table 6. The Result of Model-fit Test

D	Chi-Square	df	Sig.
Pearson	494.061	280	0.000
Deviance	327.205	280	0.027

Source: Data managed by the researcher, 2020.

Table 4 shows that leverage (X1) and liquidity (X2) variables impact Sukuk's rating, with each p-value as significant as 0.001 and 0.00. Meanwhile, the profitability variable did not affect Sukuk's rating with a p-value as big as 0.127. Leverage affecting the rating of Sukuk. This result is in line with a theory proposed by Jiang et al. (2012) and Elhaj et al. (2015), which stated that ratio leverage (debt-equity ratio) measures a company in completing its long-term obligation as the ratio is getting higher. Therefore, it will make the risks faced by the investors became higher than before. As a result, they expected a high profit.

Moreover, it will have an impact on the rating of Sukuk. The higher the risk, it will make the rating of Sukuk became lower than before. High ratio leverage implies the extensive use of debt in a company, which at the same time, will elevate profitability. On the other hand, a high debt would likely raise the riks. If a company gained profit in an adequate level of sales, assets, and capital, the profitability ratio would be high. This result shows that a better efficiency and effectiveness of managing assets would be good for Sukuk's rating.

This research is in line with the previous research which was conducted by Godlewski et al. (2013), Alam et al. (2013), and Ahmad et al. (2012), which states that the performance of a company shows through its debt ratio (debt to equity ratio), the bigger the ratio, the bigger the dependency of a company towards the debt. This condition was unfavorable if a company is relying on debt. Leverage significantly affects Sukuk's rating as it is one of the financial ratios that consider as an accountancy factor that influenced the rating of Sukuk. Besides, a company's debt is lower than equity, so a company tends to have a high capability to fulfill its obligations. A company with high leverage tends to have a current ratio and acid test ratio lower than companies with low leverage (Kaya, 2014).

The liquidity variable gives impacts on the rating of Sukuk. According to Hanafi (2004) and Halim et al. (2019), liquidity measures whether a company has a capability in returning the debt in the short-term (the due is less than a year / < 1 year) by using current assets. Hence, the lower the ratio shows low short-term liquidity, and vice versa, the higher the ratio, the more the current assets are (high liquidity and low risk). Low risk means a strong influence on the rating of Sukuk. This study is relevant to the mentioned theory. If the liquidity of a company is high, respectively, the rating of Sukuk is high. This condition is because a company can fulfill its short-term obligation appropriately, which would likely impact a better accomplishment on its long-term obligation (Azmat et al., 2014).

Companies that have high liquidity means that the current assets are more significant than the current debts. Therefore, if someday there is an alteration of economic or financial conditions, the current assets can be used to fulfill the obligation of a company related to the due date's obligations. The liquidity level directly affects the rating of Sukuk at that time. Low liquidity depicts that a company cannot fulfill its current obligations appropriately when a due date impacts the poor financial condition of a company. Liquidity ratio is most of the time used to evaluate the risks as the liquidity ratio demonstrates a company's ability to pay off its short-term obligations (Hamdan et al., 2020). Hence, knowing the liquidity ratio can be decided on how big a company may face risk. Sukuk is a debenture which uses sharia

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contract. Therefore, if an investor purchases a Sukuk of a company that issued the Sukuk, the investor will see a company's capability to return their obligation. A company must maintain its current ration to be within acceptable boundaries, particularly by the investor. That is why liquidity significantly affects the ranking of Sukuk in Indonesia (Pebruary, 2016).

The profitability variable in this research did not show insignificant results in the rating of Sukuk. The profitability ratio measured by return on assets has no implications on the growth of profits as this ratio measures a company's ability to earn a net profit based on a certain level of an asset. According to Azmat, profitability ratio measured by return on the asset would generate a view on the management in controlling the expenditure effectively to gain high profit maximally (Azmat et al., 2014). As this ratio measures a company's capability to earn a net profit according to a certain level of an asset, the higher the profitability o a company, the lower the risk of a dishonor. Thus, the ranking of Sukuk may get higher.

Profitability is information on the profit level achieved by a company. The information gives an insight into the external parties in terms of the operational effectiveness of a company. The financial report arranged by control and strict supervision would minimize the distortion and depict a company's real condition (Elhaj et al., 2015; Widani & Bernawati, 2020). This condition can be a concern for a company. Information on profitability consisted of the financial report can be legitimately useful for the investors and the Sukuk ranking agency to decide to invest and awards Sukuk's ranking.

Conclusion

The partial test result showed that the leverage and liquidity variables affected the rating of Sukuk issued by the Indonesian Stock Exchange. However, the partial test did not prove that the profitability variable impacted the rating of Sukuk. After undergoing the simultaneous test, it reveals that leverage and liquidity are concurrently affecting Sukuk's rating. This research showed that the increase in leverage and liquidity would escalate the rating of Sukuk. Leverage and liquidity affected the rating of bonds. This condition creates an implication to the companies that are maintaining their leverage and liquidity performance. The leverage ration that is leveling up would impact the increase of the rating of bonds. This result implied a company that suggests choosing to fund derived from debts rather than equity. Besides, this study implies that the company should increase its liquidity ratio so that Sukuk's rating is getting better. It means that a company is better at increasing its current assets and pushing on its fixed asset to maintain liquidity growth. The higher the current asset, it will make a company's capability to pay its obligation of Sukuk bigger than before, both in the form of interest and the number of Sukuk. This result is responded by the higher of the rating of Sukuk received by a company.

The result gives implication to the parties. This result is essential for investors to consider when investing. They are not only known about financial ratios and accounting factors, such as leverage and liquidity. They are also required to pay attention to non-accounting factors, business risks, and others. This study indicates that profitability did not affect the company is the rating of Sukuk. Besides, the results provide an evaluation note for issuers that Sukuk's rating is essential as a reflection of the quality of the company's financial performance. Therefore, they are required to pay attention to the condition of a company's internal and external factors. With the better, the companies' ratings of Sukuk will increasingly provide the right image for strengthening the Islamic securities market's development in Indonesia.

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Opportunities and Challenges in Developing Islamic Pension Funds in Indonesia

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Abstract. *Despite the rapid development of the Islamic financial sector in Indonesia, the development of Islamic pension funds is way behind those of the other Islamic financial sectors. This study aims to explore the opportunities and challenges faced by Indonesian Islamic pension funds. Utilizing a qualitative research method, the study conducted Focus Group Discussions with 23 large pension funds spread across five big cities in Indonesia. It was revealed that opportunities and prospects for developing Islamic pension funds in Indonesia are relatively good. However, various internal and external challenges were found, such as a lack of knowledge; the weak commitment of founders; lack of quality human resources; relatively unfavorable tax treatment; limited investment instruments; competition with government pension schemes; and public literacy problems. Therefore, two broad strategies are recommended to develop the Islamic funds, namely the provision of direct/indirect incentives to market players, and literacy programmes to targeted/priority groups. These strategies are expected to encourage and accelerate the growth of Indonesia's Islamic pension fund industry in the future.*

Keywords: *Islamic pension fund, pension fund, Islamic non-banking institution, Islamic finance.*
JEL Classification: H55, H75, J32

Abstrak. *Meskipun sektor keuangan syariah berkembang pesat di Indonesia, perkembangan dana pensiun syariah tertinggal jauh dari sektor keuangan syariah lainnya. Penelitian ini bertujuan untuk mengeksplorasi peluang dan tantangan yang dihadapi oleh dana pensiun syariah Indonesia. Dengan menggunakan metode penelitian kualitatif, studi ini melakukan Focus Group Discussion dengan 23 dana pensiun besar yang tersebar di lima kota besar di Indonesia. Terungkap bahwa peluang dan prospek pengembangan dana pensiun syariah di Indonesia relatif baik. Namun ditemukan berbagai tantangan internal dan eksternal, seperti kurangnya pengetahuan; lemahnya komitmen para pendiri; kurangnya sumber daya manusia yang berkualitas; perlakuan pajak yang relatif tidak menguntungkan; instrumen investasi terbatas; persaingan dengan skema pensiun pemerintah; dan masalah literasi publik. Oleh karena itu, disarankan dua strategi luas untuk mengembangkan dana syariah, yaitu pemberian insentif langsung/tidak langsung kepada pelaku pasar, dan program literasi kepada kelompok sasaran/prioritas. Strategi-strategi tersebut diharapkan dapat mendorong dan mempercepat pertumbuhan industri dana pensiun syariah Indonesia di masa depan.*

Kata Kunci: *dana pensiun syariah, dana pensiun, lembaga keuangan syariah non bank, keuangan syariah*

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Introduction

Pension funds are financial institutions that run retirement benefit schemes. As financial and investment funds, they provide benefits to individual participants, such as enabling them to have a steady income when they retire (Scott, 1988). They also act as investment instruments that can provide returns in the future (Blake, 2006; Sullivan et al., 2020). Indeed, related to the investment function of pension funds, more recently they have also been considered to be a reflection of the political leaning of their beneficiaries, aiming to gain more benefits from them (Hoepner & Schopohl, 2019; Anzia & Moe, 2019).

From a macroeconomic perspective, the existence of a well-developed pension fund industry is expected to increase economic growth, maintain financial system stability and complement the banking system in channeling funds to the real sector. The role of pension funds in promoting economic growth is made possible as the industry can channel the pension contributions to long-term investments, both in financial assets and real assets, which will improve the value of the national economy (Mayer et al., 2005). In addition, the existence of national pension fund institutions is considered essential for serving the growing number of aging populations. The absence of a national security scheme will impose a huge burden at the personal and country level unless there is a proper pension scheme (Panetta, 2006).

In Indonesia, pension fund institutions are regulated under Law No. 11/1992 concerning Pension Funds (OJK, 2019). Under this law, the institutions are treated as legal entities that manage and run schemes that promise retirement benefits, while pension benefits are defined as periodic payments paid to participants in the manner specified in existing pension fund rules In addition, several other technical rules govern the operation of pension funds in Indonesia.[1] However, it is notable that until early 2016 there were no laws or regulations governing the implementation of Islamic pension funds in the country.

As there is demand for Islamic pension funds in Indonesia, the National Sharia Council of the Indonesian Ulama Council (DSN-MUI) has issued several decisions (fatwas) related to the implementation of Islamic pension schemes. These rules include Fatwa No. 88/DSN-MUI/XI/2013 concerning General Guidelines for the Implementation of Pension Programs Based on Sharia Principles and Fatwa No. 99/DSN-MUI/XII/2015 related to sharia annuities (*al-Ratib al-Taqa'udi al-Islami*) (Rahmadini, 2019; Salam & Irsyad, 2020).

The DSN Fatwa No.88/2013 explains various matters related to the contracts used between pension plan holders and pension fund institutions; pension funds with investment managers; and pension funds with third parties who channel funds under the management of pension fund investments (see Figure 1). Meanwhile, Fatwa No. 99/2015 explains about the contract or the relationship between parties in the sharia pension fund, as illustrated in

[1] The regulations include, among others, Government Regulation No. 76/1992 on Employers' Pension Funds; Government Regulation No 77/1992 on Pension Funds of Financial Institutions; PMK no 91/PMK.05/2005 regarding the second amendment to the Decree of the Minister of Finance No. 343/KMK.017/1998 on Pension Benefits; PMK No. 19/2012 on Pension Fund Investment ; PMK No. 50/2012 on the third amendment to Minister of Finance Decree No. 343/KMK.017/1998 on Pension Fees and Benefits ; and PMK No. 234/PMK.03/2009 regarding tax incentives for Pension Funds.

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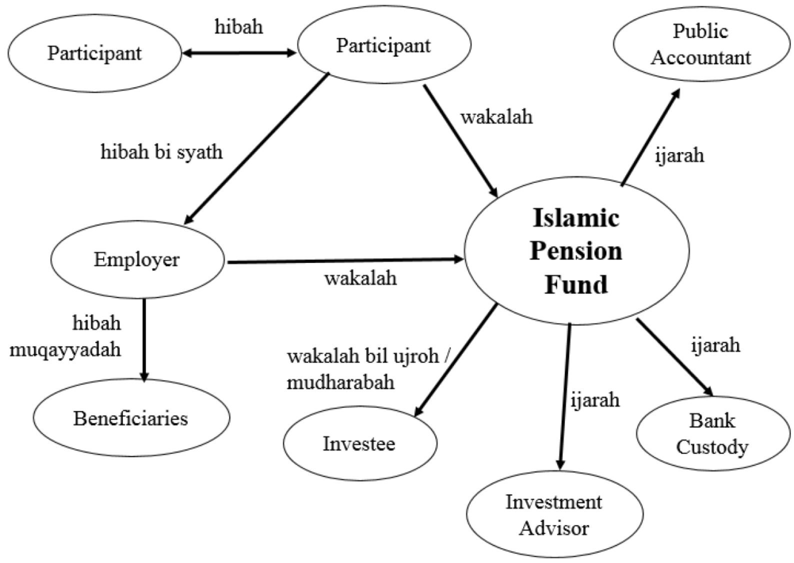
Figure 1. In was in 2016 that the Indonesia Financial Services Authority (OJK) officially issued Regulation Number 33/POJK.05/2016 concerning the Implementation of Pension Programs Based on Sharia Principles (OJK, 2016).

Figure 1. Islamic Pension Fund Schemes in Indonesia



Source: Authors' illustration based on Fatwa No. 88/DSN-MUI/XI/2013

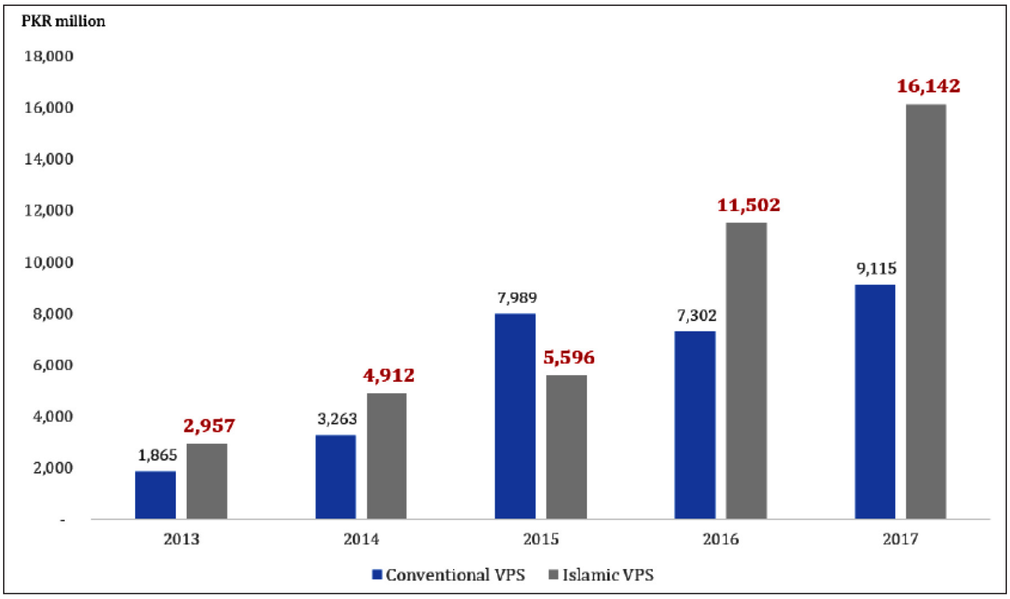
Despite the development of the regulatory framework, in the past five years the growth of the pension fund industry has tended to decline. In 2014, the number of workers participating in pension funds accounted for 5.85% of the total workforce while the number of pension funds players accounted to 267 funds (OJK, 2015b). However, from 2014 to 2018 the number of funds fell by 35, although net assets continue to grow until slowing down in 2018. The average growth of pension fund net assets from 2014 to 2018 was 10.67% per year, but this growth began to slow down from 2017 to 2018, to only 2.76% (OJK, 2018).

With respect to Islamic pension funds, there were only two players in the market by December 2018, with a total of 128,021 participants and assets of 1542.89 billion rupiahs. Compared to the countrywide total pension fund assets of 268.03 trillion rupiahs, the market share of Islamic pension funds was only around 0.5% (OJK, 2018). Despite that, an earlier survey conducted by the OJK suggested that the pension fund industry in Indonesia still had great potential for development. Indeed, the survey also found that about 80% of Indonesians were in fact interested in investing their money in Islamic pension funds (OJK, 2015a).

This optimism is presumably related to the growth of Islamic pension funds in other Muslim countries, such as Pakistan and Malaysia. In Pakistan, the rapid development of such funds is strongly related to the fiscal and financial reforms conducted by the government. The policies that have positively influenced the development of the funds include the introduction of Voluntary Pension Scheme (VPS) in 2005, which allowed individuals to voluntarily contribute to a pension fund (either Islamic or conventional) during their working life; favorable tax regulations (i.e. income tax exemption against retirement benefit);

the availability of investment instruments for Islamic pension funds (such as in the form of sovereign *sukuk ijarah*); and the launch of the Sharia Capital Market Map 2015, which issues regulations on various Islamic financial products, including sharia pension funds (Afzal, 2014). These favorable conditions allowed Islamic pension funds in Pakistan to perform better than the conventional counterparts. By 2017, the total assets of Islamic pension funds in Pakistan accounted for 16,412 million PKR (Figure 2). This indicates that the market share of Islamic funds is 64%, well above that of conventional funds (COMCEC, 2018).

Figure 2. Total Assets of Conventional and Islamic Pension Funds in Pakistan



Source: COMCEC (2018)

Positive developments have also been documented in Malaysia, where Islamic pension schemes have been gradually introduced since 2012, along with the introduction of market liberalization policies. Various pension reforms were also made, including the introduction of the Private Retirement Scheme (PRS), a private pension scheme offering 30 pension fund products, six of which are Islamic-based investment options. In April 2014, the Prime Minister of Malaysia announced investment in the Islamic EPF (Employee Provident Fund) of USD 160 trillion (Arafa, 2014). As of 31 December 2017, the sharia assets stood at 47.5 per cent of the fund's total asset exposure and contributed 42.9 per cent of total income in 2017.[2]

Considering the very small market share of Islamic pension funds in Indonesia, the relatively high demand and large market potential for the funds in the country, as well as the positive development of such funds in other Muslim countries, it is appropriate to evaluate the development of Islamic pension funds in Indonesia. In particular, it is extremely important to explore the challenges faced by the industry so that its development does not lag behind that of conventional funds in Indonesia and of similar funds in other Muslim countries.

[2] https://thelawreviews.co.uk/edition/the-islamic-finance-and-markets-review-edition-4/1209537/malaysia. Accessed 28 June 2020.

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A number of studies have addressed the challenges and opportunities for Islamic pension funds across various countries. For example, Manjoo (2012b) highlighted the opportunity for Islamic pension fund development in the UK, while Icke & Akbaba (2015) assessed the performance of Halal pension funds in Turkey. A study by Nayan & Othman (2019) also discussed the role of the Employee Provident Fund (EPF) as a Sharia-compliant fund pioneer embarking on a new journey for Islamic retirement planning in Malaysia.

Meanwhile, despite the huge market potential for the development of Islamic pension funds in Indonesia, studies on such funds are rare. Aziz et al. (2019) attempted to find the variables that affected the assets of pension funds owned by an Islamic financial institution in Indonesia. In addition, Karina et al. (2020) explored Islamic pension fund potential from the demand side, discussing the attitudes and expectations of Indonesian Muslims towards such funds.

However, it appears that almost no comprehensive and systematic empirical studies have attempted to investigate the issues of Islamic pension fund development in Indonesia. From this perspective, this qualitative study aims to explore the opportunities and challenges in developing such funds. Primary data were collected through focus group discussions (FGDs) and interviews with management personnel of 23 pension funds spread across five large cities in Indonesia (Jakarta, Bandung, Surabaya, Medan and Makassar). The data were subsequently analyzed thematically and in terms of content. It is hoped that the results will provide insights for policy makers and industry players to accelerate the development of the Islamic pension fund industry in the world's largest Muslim country.

Methods

In line with the research objectives explained above, this study employs a qualitative research approach to exploring the prospects and challenges of the Islamic pension fund industry in Indonesia. Qualitative research generally aims to explore new issues or seek new perspectives on specific issues. This can address by collecting primary data from relevant sources and analyzing them with appropriate methods (Bryman, 2008). In contrast, quantitative research is used in response to relational questions concerning variables within the research (Leedy & Ormrod, 2001). Therefore, the qualitative research approach is considered to be the most suitable method to answer the research questions and establish the prospects and challenges of the Islamic pension fund industry in Indonesia

To obtain the primary data, six series of Focus Group Discussion (FGDs) were conducted in five metropolitan cities in Indonesia, namely Jakarta, Bandung, Surabaya, Medan and Makassar. The sample comprised 23 pension fund institutions registered with the OJK. The institutions were carefully selected from funds with large assets representing three regions in Indonesia, i.e. Java (19 funds operating in Jakarta, Bandung and Surabaya), Sumatra (two funds operating in Medan), and Sulawesi (two funds operating in Makassar). Therefore, the samples were considered to be a good representation of the pension fund industry in Indonesia, and were expected to provide good quality data and insights to help achieve the research objectives. Furthermore, during the FGDs, the questions addressed focused on the opportunities and challenges faced by the industry players. Recommendations from them, if any, werere also noted.

After the qualitative data were obtained, the findings were examined using thematic analysis and content analysis. Despite the various methods available in qualitative data analysis, thematic analysis is mostly used whenever it is necessary to summarize, interpret and compare the key features (themes) from a large qualitative dataset (Braun & Clarke, 2006). This method has been used in many organizational and industrial studies (Bryman & Burgess, 2002; Cassell & Symon, 2004; Miller et al., 2004), including ones on finance institutions (Kaczynski et al., 2014). The other method utilized was content analysis, which is useful in interpreting documents and communication materials so that values, intentions and attitudes can be analyzed (Duriau et al., 2007; Loughran, & McDonald, 2016; Mohajan, 2018). Because of their suitability for answering the research questions, data analytical tools were employed in the study.

Results and Discussion

Current Situation and Opportunities

At first, the current situation was investigated in terms of knowledge levels regarding Islamic pension funds. From the FGD findings, it was revealed that the current state of the Islamic pension fund industry in Indonesia is affected by a lack of awareness and understanding regarding the concept and implementation of such funds. This was found not only amongst the Indonesia public, as suggested by a survey conducted by the OJK (OJK, 2015a), but also amongst the founders and managers of pension funds. This view was expressed by most of the respondents. Furthermore, it was found that the knowledge level of pension fund managers regarding Islamic funds was strongly influenced by information and education related to such funds.

Several respondents emphasized the importance of knowledge and education. One from North Sumatra, for example, expressed his lack of understanding of the concept of Islamic pension funds because he had never participated in education related to them. He mentioned that *"I myself have never heard of this Islamic pension fund... We have no clue. We are still blind about that Islamic pension fund...We are very blank about Islamic pension funds."* Furthermore, it was revealed that knowledge about Islamic pension funds came from involvement with pension fund associations. One respondent mentioned that she knew about several aspects of Islamic funds because she involved with the Association of Pension Funds in Indonesia (ADPI), while another respondent mentioned that he found out about Islamic funds from his workplace, which coincidently was a local Islamic university, but never involved in Islamic pension funds.

Despite this lack of knowledge, the majority of the respondents gave positive responses regarding the future prospects of Islamic pension funds in Indonesia, as well as in other countries. Habib (2009) conducted a survey on this topic and found Islamic pension funds to be an expanding market and an obvious area for investment. Kasri et al. (2017) explored the demand for Islamic pension funds in Indonesia and found that more than 70% of their

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respondents were interested in having an Islamic pension plan. This finding is supported by the fact that a large number of Indonesians are Muslim, and most of them do not have pension plans yet because current (conventional) pension funds are forbidden as they involve usury/riba practices (Manjoo, 2012a). This was emphasised by one of the pension fund managers, who stated "*For the conventional pensions alone, there are still people who think that [conventional] pensions are forbidden. I took part in a seminar a few times, and they openly said that they are forbidden*". Therefore, when Islamic funds are developed and more players exist, it is predicted their development will be massive. Indeed, it was mentioned by one of the respondents that *"Insha Allah, the future growth of [Islamic] pension funds is still very big."*

Internal and External Challenges

The development of Islamic pension funds in Indonesia is highly likely to be affected by various internal and external barriers. On the internal side, factors concerning the founder, human resource management and accounting systems appear to be the main issues and challenges in developing the Islamic pension funds.

The importance of the pension fund's founder, who has the authority to set targets and make direct fund investments, was strongly felt by the fund managers. This was reflected by one respondent, who believed that *"[The most thing important is] the founder's understanding. So, the mindset of that person [is important]"*. Nelson (2010) states that the firm founder role is essential in delivering new products and services to the marketplace and even creating entirely new categories of industry. Therefore, the initiative and support from founders are crucial in developing Islamic pension funds in Indonesia, as they are the company decision makers. However, as most of the founders have very little knowledge or concern regarding Islamic pension funds, support for converting or establishing such funds is minimal. In the words of one fund manager, the lack of support is *"Because the founders are little concerned about Islamic pension funds"*.

Another similar, yet related, internal barrier that emerged during the FGDs was the lack of human resources (managers, staff etc.) who understand Islamic pension funds. Such understanding should not only include the main aspects of Islamic funds, but also operational and supervisory aspects. Many were also worried about the complexity of the accounting rules that might be implemented should Islamic pension funds be further developed in Indonesia. At the international level, similar concerns also exist. At the IFA 2019 congress, the panelists stated that the tax community was still unprepared for Sharia-compliant finance (Haines, 2019). Nevertheless, each country's rules and guidance are unique in relation to its tax structure. In this study, one of the respondents expressed his hopes for the new industry stating that *"The accounting system should be made as simple as possible. You should develop these Islamic pension funds with simple accounting; easier to apply"*.

On the external side, challenges are related to respect of the role of the OJK (authority), taxes, investment instruments, competition with the government pension plan (such as BPJS), and public literacy. Currently, little guidance and few regulations are in place for Islamic pension funds. Therefore, it is expected that more will be done from the regulatory aspect in the future. Moreover, the taxation rules related to pension funds (such as overpaid corporate tax and double taxation on private pension funds) and the limited Islamic investment instruments in the Indonesia capital market (both in terms of number and type/variation) were perceived to be the main challenges by the pension fund managers. These issues were highlighted by several fund managers.

> *"…when the market is retail, he [the pension fund participant] must have paid income tax. This tax has to be paid again when he wants to get money from the pension funds. So, there is a double tax".*

> *"The other difficulties are [Islamic investment] instruments…there are limited instruments, Sir. So, we know that the instruments, especially in the capital market and money market, associated with sharia instruments are not great in number and not so varied."*

The government's latest policy requiring the participation of Indonesian formal workers in its obligatory pension fund scheme, known as BPJS or 'BPJS *ketenagakerjaan*', was also perceived as an obstacle to the growth of the private pension industry. This will presumably affect the interest of private companies in the establishment of Islamic pension funds in the future. One participant stated:

> *"Maybe for the people who work in SOEs* (BUMN) [the BPJS] is *not too influential. But for the private sector, it is very influential. Because I also work in a private company. There are some companies that ultimately do not participate in pension funds, because there is already BPJS and its nature is mandatory…So, the essence of BPJS itself becomes a threat…"*

Finally, the lack of literacy regarding the concepts and benefits of pension schemes is also perceived as an obstacle to increasing the penetration of pension funds in Indonesia, both conventional and Islamic. This was clearly expressed by several respondents. One fund manager said that, *"It means that…those who do not have pension funds also need to be informed. …the union workers need to be given an understanding of what the pension fund is"*, while another manager emphasized that, *"...next it is important to give people knowledge and understanding. They might not understand what a pension fund is, particularly Islamic pension funds"*. This finding is supported by Karina et al. (2020), who concluded that the low level of knowledge of and trust in Islamic pension funds were the two main reasons for people not taking them out.

Development Strategies

In addition to identifying the opportunities and challenges in developing Islamic pension funds, several respondents suggested a number of recommendations regarding strategies that could be developed to face the challenges. The first strategy emerging from the FDGs was provision of direct and indirect incentives to market players, particularly incentives related to taxes and fees. The second was the development of appropriate literacy programmes to targeted/priority groups, including internal stakeholders, such as the pension fund founder, and groups of people such as religious communities.

From the FGD findings, it was revealed that all the respondents believed that in order for Islamic pension funds to grow and develop properly, it was necessary to incentivize

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conventional pension fund institutions to establish such funds. Several incentives were proposed, including lower taxes, lower fees/contributions to the state/regulator, and more varied Islamic investment instruments (with attractive rates of return).

In relation to taxes and fees, several respondents suggested that corporate tax and government fees should be reduced. This would provide direct incentives, particularly for founders of pension funds, to establish Islamic equivalents. At the same time, the problem of double taxation levied on participants in Islamic pension fund schemes must also be avoided. This double taxation was considered unfair, as participants are taxed at the beginning and the end of the (Islamic) pension fund plan.

> *"There should be a correlation between [the establishment of Islamic pension funds] and corporate tax. Pension payments might have been part of the deduction from corporate tax at the end of the year",* and *"I am back again to incentives … the establishment of a pension fund depends on the founder's willingness. The founder must be given a discount. That would be more interesting, I think."*

> *"In my opinion, the most appropriate incentive is, yes, the contribution [to the state] which is 50% of the conventional fees [levied to conventional pension funds]. [If this is implemented], a lot of people would flock to the sharia pension funds..."*

> *"For example, specifically for individuals, the tax should be removed so that there is no double taxation, because at the beginning, when starting a pension fund, tax is already deducted ... so this should not be the case at the end…We are hit again with taxes, taxation rules, Sir".*

The respondents, who were mostly fund managers, also highlighted the limited types of Islamic investment instruments available in the market. Moreover, some also expressed their expectation that future Islamic financial instruments should produce better returns than their conventional counterparts. Somewhat ironically, this was suggested despite the knowledge that the performance of Islamic instruments depends on market conditions:

> *"Indeed, if we really want to develop sharia funds ... investment instruments should be increased for the type of sharia. Indeed, from experience so far, the returns [of Islamic investment instruments] are still inferior compared to conventional ones".*

> *"Because they [the Islamic instruments] are essentially [based on] profit sharing. The returns are also uncertain. That's what needs to be thought about, so that the returns from the Islamic funds could be good. Because the target of the development of the principal is the level of benefits we can provide to retirees".*

In addition, the respondents emphasized the importance of appropriate literacy programmes to targeted/priority groups, with priority given to the founders of pension funds. This was clearly addressed by one respondent, who stated that *"... most importantly, the authority must arouse the spirit of the founder. So, the key is for the founder, Sir".* Another respondent even suggested that, *"All of us have an obligation to provide an explanation to the founders."*

Other important stakeholders that need to be targeted are communities, such as students (education communities) and *majlis ta'lim* (religious communities). These groups are considered strategic because of their influential roles in society and their concerns for

Islamic issues. According to one respondent, *"The most effective [education campaign] is maybe going to campuses [university students]. [They] can be an extension of [the community]".* Meanwhile, another respondent suggested that, *"[Educational campaigns] to religious communities, yes, they are very effective you know ... Majlis taklim, ladies and gentlemen".*

Conclusion

The study aimed to investigate the prospects and challenges of developing Islamic pension funds in Indonesia, as this sector is considered to have great potential, but is still underdeveloped. Based on the research conducted, several interesting insights can be highlighted. In general, it could be suggested that the current outlook for Islamic pension funds in Indonesia is relatively good. However, various internal and external challenges to their development have also been identified. The main internal challenges include the low level of knowledge amongst the management of pension funds, the weak commitment of fund founders, and the lack of qualified human resources. Meanwhile, the main external challenges include unfavorable tax treatment, limited investment instruments, competition with the government pension scheme, and the low level of public literacy regarding such funds.

Based on the findings and analysis, two strategies for developing the Islamic pension fund sector in Indonesia are recommended. The first is provision of direct/indirect incentives to market players, such as lower taxes and fees. Meanwhile, the second strategy is related to appropriate literacy programmes to targeted/priority groups, including the founder of pension funds and religious communities (external stakeholders). These strategies are expected to encourage and accelerate the growth of Indonesia's Islamic pension fund industry in the future.

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Arrangements of Employer-Labor Conflicts With Game Theory: Implementation of Islamic Ethic Value

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Abstract. *Employer-labor conflicts are sometimes eternal and challenging to solve. Game theory is one of the essential ideas in settling these conflicts. Furthermore, employer-labor interactions in conflict situations are strategic. In case the employer-labor relationship is non-cooperative, taking place only once, both parties are involved in a prisoner's dilemma situation. In cooperative game theory, the players work together to win the game. Organizational management needs to consider strategic behavior, built-in cooperative games, effective and efficient collaboration between workers and employers. This study examines employer-labor conflict resolution with game theory. It incorporates Islamic ethical values using qualitative research methods. Cooperative games built on employer-labor relations derive from the brotherhood principles (ukhuwah), justice ('adl), and goodness (ihsan) that maximizes cooperation and prevent conflicts.*

Keywords: *conflict, employer, employee, game theory, Islamic ethics*

JEL Classification :C70; J01; Z12

Abstrak. *Konflik majikan-buruh terkadang abadi dan sulit dipecahkan. Teori permainan adalah salah satu gagasan penting dalam menyelesaikan konflik ini. Selain itu, interaksi pengusaha-buruh dalam situasi konflik bersifat strategis. Jika hubungan majikan-buruh tidak kooperatif, yang hanya terjadi satu kali, kedua belah pihak terjebak dalam situasi dilema narapidana. Dalam teori permainan kooperatif, para pemain bekerja sama untuk memenangkan permainan. Manajemen organisasi perlu mempertimbangkan perilaku strategis yang dibangun dalam bentuk permainan koperasi, kolaborasi yang efektif dan efisien antara pekerja dan pengusaha. Penelitian ini mengkaji resolusi konflik pengusaha-buruh dengan teori permainan. Ini memasukkan nilai-nilai etika Islam dengan menggunakan metode penelitian kualitatif. Permainan koperasi yang dibangun di atas hubungan majikan-buruh bersumber dari prinsip persaudaraan (ukhuwah), keadilan ('adl), dan kebaikan (ihsan) yang memaksimalkan kerjasama dan mencegah konflik.*

Kata Kunci: *konflik, pengusaha, buruh, teori permainan, etika Islam*

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Introduction

The focus of industrial conflict has shifted from collective confrontation to a disagreement between employers and workers (Walker & Hamilton, 2011). This condition appears to be a lasting phenomenon in the economy, with difficulty in finding common ground. In international economic forums, labor policy reform is an influential agenda to be implemented. Half the world still faces demonstrations and workers' demands. This agenda includes developed countries like the United States (US).

The labor issue faces complex problems, especially on the increasingly widespread labor market flexibility policies (LMF). Within the neoliberal framework, workers position as economic commodities ready to be traded. Apart from guaranteeing political stability, the government often promise cheap labor costs, attracting foreign investors (Siregar, 2011). Zhou et al. (2017) identified three configurations of labor relations conflict and verified the threethree dimensions through exploratory and confirmatory factor analyses. Violations of established laws and regulations cause Rights-based conflicts. Interest-based conflict involves violations of employment terms and working conditions, which are induced by factors such as salary, welfare and working conditions. Emotion-based conflicts are caused by the employer's disrespect for employees and interpersonal conflicts between employers and employees.

Game theory is a much researched area in economics. It is a branch of applied mathematics and economics, dealing with multi-person decision making situations. There are several studies on conflict resolution between employers and employees using game theory. According to Joesoef et al. (2004), competitive strategy is dominant in management-employees in East Java. Although both sides reached an equilibrium point, they fell into a prisoner's dilemma situation. This is because both parties stuck to their dominant strategy. Analysis of interactions among employees and employers, using game theory, show that when cooperation is established, it is likely to encounter conflicts. Yadav et al. (2015) reported that incompatibilities exist in the aims and strategies of the employers and employee due to different psychological factors. This proves inefficient or unproductive for all the involved parties. Both implicit and explicit contracts are critical in addressing authoritative behavior and facilitate cooperation on organizational safety issues.

Sigri & Karaback (2019) manage the labor conflicts by improving the understanding of mediation dynamics from a game-theoretical perspective. Signaling game model is adapted to a hypothetical labor dispute based on the legislative regulations on the mandatory mediation system in Turkey. The paper determined mediation equilibria where both players gained positive payoffs. Jilani & Valeed (2014) analyzed game and auction theories from the Islamic shariah perspective. The theory permits certain acts, including cheating, collusion, and unnecessary price-hiking, which directly conflict with Islam Shariah laws and practices. The auction theory also requires further refinements to come up with formats permissible in Islamic Shariah. Implementation of Islamic Shariah is expected to minimize oppression, injustice and selfish motives from trade contracts.

Assadzedeh & Javidi (2018) used game theory to investigate the problem of eliminating a competitor from the market on an Islamic economics prospective. This article provides a new

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methodology for analyzing the reasons behind Islam's endorsement of virtues such as justice, and the condemnation of stinginess and collusion. The consequences of eliminating rivals in society have been investigated by modeling collusion in the form of a game. The results indicate that the Islamic approach achieves fair trade objectives while preventing profiteering behaviors.

From previous research, the game theory not comprehensively discussed based on Islamic perspective. The research mainly focused on the Islamic value trade contracts. This paper provides an overview of how to resolve labor conflict by implementing Islamic ethical values completely. Cooperative games derived from the brotherhood principles (ukhuwah), justice ('adl), and goodness (ihsan), place laborers as employer partners, maximizing their collaboration. The conventional conflict resolution still leaves a prolonged problem by placing the workers' as company subordinates, sabotaging effective cooperation.

The research objectives to resolve labor-employers' conflict with cooperative game theory by implementing Islamic ethical values, bringing conflicts to a total end. In case employees and employers both improve their efforts in enhancing commitment brotherhood factors, their expected individual utility payoff incurs a lower cost.

Methods

This study examines employer-labor conflict resolution with game theory. It incorporates Islamic ethical values using qualitative research methods (Moleong, 2017). Data analysis activities include reduction, data display and conclusion drawing/verification. Game theory, employer-labor relations articles and how Islam incorporates ethical values into the co-operative game theory strategy are achieved through in-depth analysis, deducing sensible conclusions and generalizations based on the obtained data sets.

Result and Discussion

A conflict is a difference in perception of interests with no alternatives. As long as there are differences, conflicts cannot be avoided and will always arise until they satisfy the aspirations of both parties (Wirawan, 2011). There are three dimensions of labor relations conflicts, including rights-based, interest-based, and emotion-based. Rights-based are caused by violations of established laws and regulations. Interest-based conflicts involve violations of employment terms and working conditions, induced by factors such as salary and welfare. Emotion-based conflicts are caused by the employer's disrespect for employees and interpersonal conflicts between the two parties (Zhou et al., 2017).

Game theory literature shows that in conflict situations, each party tries to consider the decisions to be taken by competitors. For example, when a union conducts activities demanding wage increases, it is responded to by employers with other strategic actions, such as proposing a family allowance increase. A paper published by John Nash in 1950 was a contribution to the field of Game Theory and a general understanding of strategic decision-making. The first part presents a non-cooperative (or competitive) solution for n-person variable sum games. This is the well-known Nash equilibrium, corresponding to a set of strategies for each agent. It provides no incentives to anybody for unilaterally changing the proposed strategy. The second part deals with a co-operative solution for two-person variable sum games satisfying a suitable set of axioms (1950). In 1953, Nash presented another threatening cooperative solution, when cooperation among the agents is brought about by coercion (Fragnelli & Gambarelli, 2015).

Employer-laborer interaction in conflict situations is strategic. The parties observe, predict and count the steps of the other party. According to game theorist, a non-cooperative relationship that takes place one time (one shoot time), traps both parties in a prisoner's dilemma situation (Joesoef et al., 2004). The prisoner's dilemma is a standard example of a game analyzed in game theory, showing the reason for 2 completely rational individuals might not to co-operate, even when it appears that it is in their best interests.

Prisoner's dilemma is a two-person game where each player simultaneously chooses whether co-operate or defect. When they work together, each gets a reward R greater than the penalty P they both receive on failing to co-operate. There is tension between optimal rational and social individuals when the experiment gives a greater result T than R (not co-operating while others work together), and the result S smaller than P (working together when others do not co-operate). In this case, non-cooperation is the dominant strategy in the game (Embrey et al., 2017).

Figure 1. The Prisoner's Dilemma

C	R, R	S, T
D	T, S	P, P

C	1, 1	-l, 1+ g
D	1+ g, -l	0,0

From Figure 1, the problem with the application of economic rationality is recommending to leave co-operation commitments with other economic actors (betrayed). This is a consequence of maintaining self-interest in every economic actor. In the prisoner's game theory, economic actors' motives can clearly be illustrated. This provides an understanding that non-cooperation is more beneficial than co-operating. However, co-operating through commitments not to admit evil is unprofitable (Nurohman, 2010).

Holding salary and wage negotiations between employers, organizations and trade unions is very difficult. This is because the two parties have different interests. Workers want the highest salaries while companies want to keep them as low as possible. Negotiations can reach a dead end with no agreement (equilibrium) because of the competitive strategy applied. The prisoner's dilemma is also the result of the rules set in the game implementation, guiding the players' behavior to a non-cooperative strategy.

The Relationship between Employers and Employees in Islam

Islam offers a unique and noble concept of human relationships at the personal, family, and work levels. The basic Islamic principle shows that humans should consider one another as brothers. The principle unites all individuals in the bond of universal brotherhood and *ukhuwah*, as members of a single family. Every individual has the right to be equal in social status (Hoque, 2011). The economic system is based on competition and co-operation. An

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individual's economic behavior, while competitive, must be based on the desire to assist and co-operate.

Islamic teachings provide guidelines for employers to avoid the exploitation of one of the 2 parties. It emphasizes the importance of positive influence, evident from the following *hadith* of the Prophet Muhammad (PBUH): "Should I not tell you about what is more pious than the rank of fasting, prayer, and charity? They said: Of course! He said: Make peace with one another because the real damage to each other's relationships is *haliqah.* I am not talking about cutting hair, but shaving religion" (HR. Tirmidhi).

Islamic law minimizes the possibility of conflict between employers and workers (Mirza, 2016). Business people assume that sustenance is mandatory and belongs to Allah absolutely, and should be used for humanity's welfare. They consider the employee as a big family and part of their loved life. The right framework for employer-labour relations can be derived from the brotherhood principles (*ukhuwah*), justice (*'adl*), and kindness (*ihsan*). Moral values clean business people from basic sentiments such as exploitation, producing feelings of mutual trust and harmony. In a *hadith*, Rasulullah SAW said: "The workers are your brothers authorized by Allah to you. A worker should be given food, clothes, and do not be forced to do something. When necessary, the worker should be helped (Narrated by Bukhari).

In pre-Islamic societies, labor was generally meant for slaves. The slaves suffered greatly because of inadequate food, clothing and shelter. The Prophet Muhammad (PBUH) proposed a structural change rooted in the economic relations between employers and workers. Slaves that originally worked without pay were upgraded to be their master's relatives and colleagues. The Prophet expected the community to place slaves as partners and shareholders, and laid the foundation for an economy in which capital and work must join as partners, not as workers and employers. That did not abolish wages because the economic service sector could not operate without it. In the production sector, however, workers are united in the resources of their owners. They not only receive wages but also obtain other rights, such as welfare (Hasanah, 2012). Aedy (2011) shows the differences in the status of the workforce from Islamic and conventional views (See Table 1).

Table 1. Differences in Islamic and Conventional Labor

Islamic Labor	Conventional Labor
Labor is a partner of the company.	Labor is a factor of production, positioned as a subordinate to the company.
Tasks performed following expertise, ability, and sincerity.	The term of sincerity is unknown because each job is a cost that must be replaced with greater results.
The amount and payment must be according to the agreement of the second party.	The company determines wages and reimbursement of payments unilaterally.

Arrangements of Employers-Employees Conflict with Game Theory: Implementation of Islamic Ethics Values

In co-operative games, players work to win the game and share the end prize. There are 2 basic questions in these games: First, with whom should a coalition win? Second, how do you share prizes when you win?

Therefore, the players' coordinate by sharing the results outlined in 3 agreements as follows: first, a joint strategic agreement to win the game. Second, agreement on the contribution of shared resources. Third, the agreement on how to share gifts between players.

John Nash argues that non-zero-sum games are win-win, with both parties feeling happy (Raoof & Al-Raweshidy, 2010). Analysis of the employee-employer interactions is conducted using game theory. Therefore, co-operation is an opportunity for conflict resolution. The Qur'an explains how a decision can benefit both parties, Surah Al-Anbiyaa verses 78-79: "the goat belongs to his people and the decisions given by them are witnessed. Therefore, Sulaiman has been given an understanding of the law (which is more appropriate); and to each of them we have given wisdom and knowledge and we have subdued the mountains and birds, all weaved with David, and we did it."

According to Ibn Abbas' history, group goats damaged the plants at night and the owners complained to the Prophet David. Importantly, the prophet decided that the goats be exchanged with the damaged plants. However, Prophet Sulayman (as) decided that they be handed over temporarily to those with plants. People with goats are therefore required to replace the plants. In case the new plants can be harvested, the owners may take the goats back. The Prophet Sulaiman As' gave the right decision.

The conventional labour-employers conflict resolution with co-operative game theory leaves a prolonged disagreement, because it still places the workers as a subordinate of the company, hampering effective collaboration. When employer's still view laborers only as factors of production positioned as subordinates to the company, the conflict between them never ends. Workers desire to eliminate exploitative entrepreneurs while employers want to fire workers protesting against policies from the company's elite. The emergence of power and authority gives rise to two parties, one controlling the other. In this connection, there is an association that contributes to a conflict when implemented.

In a capitalist setting, labor is considered a human-owned resource used in the production process, specifically as an input or factor of expenditure. In Islam, this would degrade humanity as God's representative on earth. Workers sell part of what they have to be compensated through wages. They should not be considered as factors of production or expenditure. By doing this, humans are submitting to other humans. Baqir al-Sadr also questioned labor as an expenditure factor since workers are human beings and not assets that may be owned.

Islam stresses on the participants' intention while game theory focuses on maximizing profits and minimizing losses by any means. Therefore, these two approaches have conflict in thought and practices. To maximize the outcome of a game, absolute cheating is permissible, while Islam is against such sinful acts. In co-operative games, collusion is allowed, while it is prohibited by the Islamic laws (Jilani & Valeed, 2014). The economic system of Islam is based on the principles of property diversity, justice, co-operation, competition and economic ethics. These criteria create incentives for economic activity along with divine satisfaction and service to the Islamic community. (Assadzedeh & Javidi, 2018). The labour-employers' conflict can be resolved entirely with co-operative game theory by implementing Islamic ethical values. This is based on the brotherhood principles

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(*ukhuwa*) justice, (*adl*), and goodness (*ihsan),* positioning laborers as partners to maximize co-operation between the parties.

Ukhuwa creates a solid and intact brotherhood and affection, ultimately making the employer-labor relations more effective and efficient. Employers' expectation from the employees in terms of production targets, attitudes, loyalties and co-operative efforts helps understand the employees' resources, desires, motivation and capacities. The employees' expectation from the employer is not only in the form of payment but also for security, the opportunity for advancement and protection. This is because they want self-expression, recognition and acceptable working conditions and environment (Yadav et al., 2015). *Ukhuwa* can be part of the best organizational psychology for the industry.

According to Yadev et al. (2015), optimizing the efficiency of industrial safety measures depends on strategic actions taken by the employers and employees. Therefore, an improvement in their efforts to enhance psychological factors lowers the cost of individual utility payoff. Furthermore, the individual utility payoff is expensive when they both enhance psychological factors. When the factors are enhanced by both of them, which are a costly individual decision, the other party benefits. This game can be represented in Table 2.

Table 2. Game in Tabular Form

		Employers	
		Enhance	**Sustain**
Employees	**Enhance**	Less costly, Less costly	Very costly, benefic
	Sustain	Benefic, very costly	Costly, costly

Seidu (2009) stated that there is a positive relationship between good ethics in HR. There are optimal solutions to difficult situations when participants can be trusted and follow a set code of ethics. This principle is implemented in the game of the prisoner's dilemma (10 each for each player). The highest results are obtained when the players can trust each other to choose a mutually beneficial solution. Ethical human resource management may lead to profitable solutions faster than exploited learning.

Islam offers wage conflict settlement, saving the interests of both parties with the principle of wages that fulfills eligibility, justice and virtue (Hoque, 2017). A decent wage should be sufficient to meet all basic needs, including clothing, food and shelter. Rasulullah SAW teaches on payment of employees. "Whoever is a worker for us, let him find a wife (for him); in case a servant does not have one, he should find one for his servant. In case one is homeless, a place to live should be provided." Abu Bakr said: "It was reported to me that the Prophet Muhammad said: 'Who takes an attitude other than that, he is an outrageous or a thief." (HR. Abu Daud).

In addition to decency, wages in Islam must also show the principle of justice. Rasulullah is responsible for setting employee payments according to conditions, responsibilities and types of work (Syed, 2006). Justice means proportionality, and therefore, too high wage ratios are a form of injustice. The wage ratio in developed countries is between 1:25 and 1:30. Disparities that are too far trigger jealousy among workers, encouraging demonstrations (Sutinah, 2011). Islamic historical data shows that the minimum wage of the Prophet (5H) was 200 Dirhams, while the maximum was 2000 dirhams, with a ratio of 1:10. According to the development of the Medina economy at that time, the minimum payment was 300 dirhams, and the maximum was 3000 dirhams (Batubara, 2013). Currently, the company claims that it is unable to pay the minimum wage to employees, while the directors' salaries keep rising into millions of rupiahs. Middle to top directors often receives excessive wages and facilities, while workers at the operational level are limited to the minimum salary. The government should regulate this ratio since workers are also entitled to the company benefits.

Virtue (*ihsan*) or goodness towards others are actions taken for people beyond limits without any obligation (Qardhawi, 2002). They are comprehensive and encompassing in the world and the hereafter. They are not only limited to increasing economic (material) help, but also spiritual assistance. An example is an entrepreneur that not only thinks about personal well being but also the prosperity of all workers. Co-operative games built on employer-labor relations are derived from the principles of brotherhood (*ukhuwah*), justice *('adl*), and goodness (*ihsan*) that can maximize collaboration between the parties, avoiding conflicts. The great Islamic commitment to brotherhood and justice demands that all resources be used to realize the *sharia maqashid*. This includes the provision of basic human needs, such as clothing, food, shelter, education and health. Workers and employers are at the same level of humanity, although in the corporate structure, there are capital owners, shareholders, and workers. Humans in society are united not to meet each other's needs, but to mutually take care of one another and responsibility for the whole welfare.

Islamic system requires a humane and fraternal (brotherhood) design while fixing the compensation. An organization should structure the compensation package for its employees in such a way that it lets them meet their basic needs and with a standard of living that is comparable with the employer, subject to the maximum of the employees' contributions with the employer. This is required by the Islamic principles of ethics, namely brotherhood, benevolence, and fairness (*Ukhuwwah*, *Ihsan* and *'adl*) (Khan et al., 2010).

Al-Banna identifies the following prerequisites of a contract in Islam: equality of the contracting parties; prohibition of coercion; and conformity with general Islamic values. Al-Banna notes that in employer-employee relations, legal equality is not translated into substantive equality. Employees always remain under immense pressure to earn a living and therefore accept employers' terms and conditions. Al-Banna terms such contracts as "submission contracts", because of the employer's influence to dictate its terms in violation of the Islamic principles of justice and equality (Syed & Ali, 2010).

Islam has defined the healthy relationship between both employee and employer by Islamic ethics include fairness in wages, honesty and justice, humility, patience, equality and unity, fairness in dealings and promise fulfillments. Muslim is obliged to implement all the Islamic ethics and teachings as an act of worshiping Allah and wish for Allah's blessings and success for all future endeavors. As a result, business would prosper to the advantage of both the employer and the employee, and the national wealth would also increase (Ali et al., 2018).

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Conclusion

Employer-labor conflicts are like eternal conflicts challenging to resolve completely. A competitive strategy is used, in which both parties stick with their dominant stands. They are, therefore trapped in the prisoner's dilemma situation. Analysis of employer-worker interactions using game theory show that co-operation provides an opportunity for conflict resolution. The players work together to win the game. Organizational management needs to consider strategic behavior in the form of co-operative games, effective and efficient collaboration between workers and employers. Unfortunately, the conventional conflict resolution leaves a prolonged conflict by positioning workers as company subordinates, hindering effective collaboration.

Islam views the employer-labor relations differently. The framework established is derived from the brotherhood principles (*ukhuwah*), justice *('adl*), and goodness (*ihsan*). Islamic commitment to brotherhood and justice demands that all resources be used to realize the *sharia maqashid*, the fulfillment of basic human needs. Humans are united not to meet each other's needs, but to take care of one another mutually and take responsibility for the whole welfare. Employers-employee conflicts are caused by violations of established laws and regulations, violations of employment such as salary, welfare and working conditions, and interpersonal conflicts resolved in ways that prioritize mutual benefits. This study recommends resolving labor-employers' conflict with co-operative game theory by implementing Islamic ethical values, bringing conflicts to a total end. In case employees and employers both improve their efforts in enhancing commitment brotherhood factors, their expected individual utility payoff incurs a lower cost.

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Probability of Paying Zakat from Micro Financing Project Returns

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Abstract. *The study aims to investigate the probability of paying zakat among participants or recipients of micro-finance scheme of Amanah Ikhtiar Malaysia. A survey is conducted on participants of Amanah Ikhtiar Malaysia scheme using convenience sampling in Perak and Kelantan. Data from the survey are analyzed using descriptive statistics and logistic regression. The results show that higher probability of paying zakat among respondents determined by small household size, lower per capita income, higher education level and those living in Perak. Thus, efforts should be taken by zakat institutions to well develop good and efficient methods of zakat collection among the participants specifically among low educated and higher income/return of the projects.*

Keywords: *zakat, microfinance, Amanah Ikhtiar Malaysia, Logit regression*
JEL Classification: C31, C83, D64, I39, G23

Abstrak. *Penelitian ini bertujuan untuk menginvestigasi kemungkinan pembayaran zakat di kalangan peserta atau penerima skema keuangan mikro dari Amanah Ikhtiar Malaysia. Survei dilakukan terhadap peserta skema Amanah Ikhtiar Malaysia dengan menggunakan convenience sampling di Perak dan Kelantan. Data dari survei dianalisis menggunakan statistik deskriptif dan regresi logistik. Hasil penelitian menunjukkan bahwa probabilitas yang lebih tinggi untuk membayar zakat di kalangan responden sangat ditentukan oleh ukuran rumah tangga kecil, pendapatan per kapita yang lebih rendah, tingkat pendidikan yang lebih tinggi dan mereka yang tinggal di Perak. Oleh karena itu, lembaga-lembaga zakat perlu diupayakan untuk mengembangkan metode penghimpunan zakat yang baik dan efisien di kalangan peserta, khususnya di kalangan yang berpendidikan rendah dan berpenghasilan/pengembalian proyek yang lebih tinggi.*

Kata Kunci: *zakat, keuangan mikro, Amanah Ikhtiar Malaysia, regresi logit*

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Introduction

In an attempt to reduce poverty and income disparities in Malaysia, the government of Malaysia has adopting microfinance as one of the objectives in launching New Economic Policy (NEP). In some countries, microfinance has been seen as an important tool to help the low-income group of the society in starting up a business and as a way out from poverty (Kassim et al., 2019). Malaysia microfinance landscape has benefited more than one million micro enterprises in the country (The Star, 2017). The group of society that excluded from the capitalist based system now is able to earned capital financing and creates their income despite of not having collateral.

Historically, in 1976, Muhamad Yunus had introduced micro-credit approach in Bangladesh to eradicate poverty and since then, this approach was used in many countries all over the world. Similar program first conducted by David Gibbons and Sukor Kasim in Malaysia in 1986 under Universiti Sains Malaysia (USM). This project was known as Projek Ikhtiar, which later known as 'Amanah Ikhtiar Malayasia' (AIM). It was launched as Malaysian model of Grameen Bank's approach. Islamic Economic Development Foundation of Malaysia, Asia-Pacific Development Centre and the Selangor State Government funded the project. It was conducted by USM under the Centre for Policy Research of USM to reduce rural poverty level by providing micro-credit to the poor. Specifically, the goal of micro-credit scheme is to increase income and strengthen the living condition of the poor.

The expansion of AIM is basically assisting the poor who rarely involved in banking activities. The poor are normally lack of capital and thus unable to improve their quality of life. The pioneer project implemented in the northwestern area of Selangor for two and a half years. There were 373 poor households received their first loan. At least 90 percent repayments made by the participants which include loan capital and cost of financing at the end of the Projek Ikhtiar. The outcomes proved that the program was successful. The participants based on their skills and experiences conducted several projects using these funds. Among them are retail shops, farmers market, restaurant, rice, vegetable and animal farming. Since most of the AIM participants are Muslims among the Malays, it is perceived that they are obliged to pay zakat from the incomes received of the project scheme involved.

Zakat is one of the five pillars of Islam that basically a form of material and spiritual worship. The objective of paying zakat is to cleanse the wealth and positions by contributing a certain amount of net income that exceed nisab per year to the poor and needy. The term zakat itself means increase, purification and blessing. Thus, it aims at raising grace, purification and good works (Hafidhuddin, 2002). According to Al-Qardawi (1993), there are twenty-seventh places in the holy Quran mentioning on this intelligence obligation and thirty times in the Quran zakat is associated with prayers. This necessity is emphasized in the number of the hadiths. Apart from a compulsory worship, zakat has socio-economic goals. Zakat funds could act as social security in Islam that will guarantee provisions for the needy and weak people in the society (Ab Rahman & Omar, 2010). It can also become a pool of funds for financing development activities in developing countries like Bangladesh, thus reducing the reliance on foreign aids (Hassan, 2010).

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Most importantly, zakat is one of the key measures for poverty eradication (Hassan, 2010). The successful story of zakat in alleviating poverty has been proven during the era of Caliph Umar bin Abdul Aziz where they couldn't find any zakat recipients in the country at that time (Ayuniyyah, 2011). If it is well-managed according to the sharia, it can be part of a long-term strategy to alleviate poverty which may includes development projects, educational services, and health care services for the asnaf (Hassan, 2010; Abdullah, 2010). This is agreed with study by Furqani et al. (2018), which believe zakat can solve for poverty and economic inequality in Indonesia. Therefore, it has a very important position in the development of the Muslim community.

A true Muslim who believes in Allah and the Prophet (PBUH) will constantly protect his *imaan* by fulfilling the obligations due upon him. When a Muslim pays zakat, it is a sign that he is striving to become a servant with strong faith to Allah and becoming a true brother in Islam to other Muslims who are in need (Ab Rahman & Omar, 2010). Thus, through zakat, not only it fulfills sharia requirement and preserves *aqidah*, but it also strengthen the Muslim brotherhood since the social gap between the rich and the poor has been reduced. In addition to the worship factor, the individual understanding on Islamic rules will motivate people to fulfill the obligation of paying zakat.

Immediate payment of zakat is encouraged by majority of Muslim jurists (Abdullah & Wan Ahmad, 2012; Aidit, 1998; and Al-Qardawi, 1998) argued that the inability to pay zakat is mainly due to the level of faith of individuals to perform religious obligations. Meanwhile, a study by Bakar & Rashid (2010) showed that understanding about Islamic principles in particular individuals understanding about the conception of property and wealth in Islam becomes the main factor for the willingness to pay zakat. Here, one will perform the obligation of paying zakat if he or she believes that the property he or she owned is only temporarily and Allah is the only and absolute owner of all things in the heaven and the earth. Besides, Reinstein (2006) stated that religious faith is an important determinant of religious and secular giving. This study consistent with Lunn et al. (2001), that also agreed that there is positive relationship between religious inclusion and religious participation. They found that those who went to church regularly and conservative Presbyterians would give more. Abdullah & Sapiei (2018) mentioned that religiosity level of a person significantly influenced zakat compliance yet a formal Islamic educational background had no significant influence on the tendency to pay zakat. Mokhtara et al. (2018) also put a greater concern on the religiosity level of zakat payers. Religiosity level significantly affects zakat payments especially to those with high level of knowledge and practice of Islam in their daily life.

Other than one's level of religious faith and knowledge regarding zakat, confidence and trust in the zakat institutions also play an important role in influencing people to pay zakat (Mujiyati et al., 2010; Ali et al., 2018; Othman et al., 2018). Saad et al. (2020) measure the business zakat compliance behavior and found out that for individuals opting to pay zakat, they must have positive attitude towards zakat payment. This positive attitude comes from their knowledge on zakat, the attitude to not evade zakat payment and attitude towards moral reasoning. Thus, zakat institution should put a clear positive method and promotions in zakat collection without unintentionally promote zakat evasion. This idea similar with

Saad et al (2019) in the discussion on the importance of increasing the knowledge and self-confidence of zakat payers, and so higher numbers of interaction between zakat institutions front staff with the zakat payers. These three indicators will provide a positive behavior for zakat payers to pay zakat. It is a fact that there is no specific law to force zakat payment on those who are eligible. Thus, a community awareness and willingness to pay zakat is important to be pursued. Khamis & Yahya (2015), however, stated that law enforcement influence Small Medium Enterprise's (SMEs) entrepreneurs to comply with business zakat payments. Thus, even though there exist people who try to evade zakat payment, through the law enforcement zakat collection could be maximized.

Cokrohadisumarto et al. (2019) discussed four main indicators to increase zakat payment namely; knowledge on zakat, credibility of zakat institutions, role of information and role of religious leaders. These four indicators sum up could increase the amount of zakat payment. Ghani et al. (2018) highlighted the importance of trust among zakat payers towards zakat institutions. Zakat payers tend to evade zakat if there is lack of trust to the zakat institutions and if there is misunderstanding on the zakat distribution by the said institution. Nevertheless, zakat is still one pillar of Islam and no matter how zakat payers tried to evade it, they will still be held accountable later in the hereafter. Firdaus et.al. (2012) conclude that Muslims who are paying zakat monthly and yearly tend to have stronger faith, self-esteem, sacrifice and appreciation. The preferred place to pay for zakat / charity also affects the monthly wage payment preferences of the participants. Those who pay zakat to official institutions have a good decision about the performance of the institution. However, they found that the perceptions of those who pay zakat to formal or informal institutions are indifferent. This study also predicted the potential of zakat collection in Indonesia and explored the relationship between zakat payments and demographic variables. The finding is that around 217 trillion rupiahs could be the sum of various potential zakat collections in Indonesia. This figure equals to 3.4% of Indonesia's GDP in 2010. The study also found that occupation, income and education are important determinants of number of participation and the choice of place while paying zakat and charity.

Other research examined the demographic influences towards Muslims behavior in paying zakat on income are such as Ali et al. (2003), Kamil (2005), Wahid et al. (2005b) and Sanusi et al. (2005). Demographic factors that have been researched include gender, age, marital status, education level, number of dependents and income level. Wahid et al. (2005b), for example, tested thirteen factors that might influence the payment or non-payment of zakat on income in Malaysia. Using logistic regression analysis, they found that five factors significantly influence the payment of zakat on income. Those are age, marital status, education level, income level and payment through salary deduction mechanism. Additionally, it is found that working female is more likely to pay zakat on income. Kamil (2005) tested the influence of the so-called intrinsic motivational factors of individual Muslim towards the compliance behavior of zakat on employment income. Among the intrinsic motivational factors included are perceived service quality, exposure on zakat promotional campaign, knowledge on zakat on income and religiosity. It is found that three variables, i.e. perceived service quality, level of zakat knowledge, level of exposure

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to zakat promotional campaign, to be significantly related to the compliance behavior in a positive direction. Another variable i.e. religiosity was found to have a negative correlation with compliance behavior.

In addition, Nor Ghani et al. (2001) tested whether factors like privatization of zakat institution, awareness regarding the zakat obligation, income growth and the rate of growth of zakat base population have any impact on zakat collection. They concluded that privatization has no significant impact on zakat collection, while the remaining three factors contributed to the differences in the zakat collection performance. Studies done on public institution of higher learning (IHLs) conducted by Ali et al. (2003) and Sanusi et al. (2005). Ali et al. (2003) surveyed employees of National University of Malaysia (UKM) and found six factors significantly influence their behavior on zakat income payment.

These factors include gender, number of dependents, education level, and knowledge on zakat on income, knowledge on Islam and level of piety *(iman)*. However, factors like education level and knowledge on zakat on income negatively impact the zakat on income behavior while the remaining factors are positively related. Other studies that also discussed about the factors that influence zakat compliance behavior focusing on the demographic variables such as gender, age, marital status, education and income level are Ismail et al. (2012), Idris (2006) and Wahid et al. (2005a). Thus, socio-economic status could be regarded as important determinant of zakat compliance behavior among Muslims.

In general, many of the previous studies that tested the demographic factors affecting the zakat payment behavior are focused on general Muslims. To the knowledge of authors, none of the previous studies mainly focus on the respondents who are among the poor, particularly those who are assisted through the micro financing programs. Since the program's objective is to pull out the participants from the so-called poverty circle, the successfulness of the program might not block them to perform the obligation to pay zakat as Muslim. Thus, it is important to explore the probability of these microfinance recipients to pay zakat from income that they obtained under the scheme.

The present study, thus, looks at the probability of paying zakat among members of AIM. These participants of AIM project are those who received micro-credit from AIM to fund micro and small businesses. The study is outlined as following: Section 1 discusses a background of microfinance and zakat as well as review of previous studies. In section 2, data collected and methods used in the study are explained. Section 3 aims to display and discuss the results of study and Section 4 concludes the study and outline policy implications.

Methods

In this study, the respondents of the survey conducted are participants who received credits as loan from AIM to fund activities that generate income. The sample respondents are AIM participants in Perak and Kelantan. These two states are selected as they have large number of participants. Two stages of stratification involved in selecting the sample respondents. First, two areas from each state are chosen which are Kuala Kangsar and Teluk Intan in Perak and Kota Bharu and Tumpat in Kelantan. Second, from each area, respondents are randomly selected from different centers (called 'pusat' or centre), which are AIM branch offices. The present study is able to collect 1,961 usable responses from both states. The variables developed in the study are basically from the responses of survey questions. These variables are listed and defined in Table 1.

Table 1. Variables and Definitions

Variable	Definition/description
Marital status	A dummy variable is used for marital status which is 1 represents *married* respondents and 0 represents *non-married or divorced*
Age	Age of respondents (year)
Level of education	The education attainment of respondent that is ranged from 'no education at all' (1) to the highest level of education, that is, 'post-graduate level' (5).
State	A dummy variable that records the state where the respondents is living. Value 1 is coded for those live in Kelantan and value 0 is for those live in Perak.
Household size	Total number of persons living in similar home
Gender	A dummy variable that is coded as 1 for 'male' and 0 for 'female'.
Duration in AIM	Monthly duration that respondent is becoming members of AIM and receive microcredit support from AIM.
Income gained when joining AIM	Yearly income and per capita yearly income of respondents after they involve in the AIM program. The per capita annual income is defined as yearly income per household size.
Ability to pay zakat	A dummy variable. Binary number of '0' (not able to pay zakat) and '1' (able to pay zakat).
Amount of loan/ microcredit received	Value of loan received by members of AIM when they involved with the microfinance scheme in Ringgit Malaysia (RM) (transformed into natural log)
Value of assets	Total value of all assets belong to members of AIM while receiving the microcredit which could be in term of land, house, vehicles or others in Ringgit Malaysia (RM) (transformed into natural log)
Ratio of spending to income	The proportion of spending by respondents from the income received from the project financed by AIM per month

Source: Authors' list

The present study adopts two methods of analysis on the collected data. First, descriptive analysis is conducted with the use of frequencies and cross-tabulation. In cross-tabulation, a similar Chi-Squared test could also be used to test for relatedness or independence between variables. Pearson chi-square and the likelihood-ratio chi-square are used for the test. Furthermore, the present study uses a nonlinear regression specifically uses binary dependent variable. The model is developed to test the probability/likelihood that the respondents pay zakat. It is called logistic regression that adopts a nonlinear formulation that forces the predicted values to be between 0 and 1 by using cumulative probability distribution function (c.d.f.), denoted by F. This logistic cumulative distribution function has a specific functional form, defined in terms of the exponential function. The population logit model is written as:

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$$\Pr(Y = 1 | X_1, X_2, \ldots\ldots) = F(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots + \beta_k X_k) \tag{1}$$
$$= \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k)}}$$

For the current study, a logit model could be written as follows:

$$L_i(Y) = b_0 + b_1(X_1) + b_2(X_2) + b_3(X_3) + b_4(X_4) + b_5(X_5) + b_6(X_6) + b_7(X_7) \tag{2}$$

Where Li is a dummy variable (value of 0 or 1). The independent variables included are marital status (X_1), level of income after joining AIM (X_2), level of education (X_3), gender (X_4), age (X_5), dummy for state (X_6), household size (X_7) and others. Once the regression made, the antilog of the slope coefficients (β's) subtract one from it and multiply by 100 will provide the percent change in the odds for a unit increase in the jth regressor. This percentage change could be interpreted, as probability that respondent will opt to pay zakat due to a unit increase in independent variables.

Instead of using R^2 to measure the goodness fit of the model, it is suggested that another measure of fit should be adopted, namely "fraction correctly predicted'. Pearson ^{2}-type tests of goodness-of-fit, namely Hosmer & Lemeshow (1989). For this test, poor fit indicated by a significance value less than 0.05. Two pseudo R-squares are reported, namely, Cox and Snell R-square and Nagelkerke R-square. Both values provide an indication of the amount of variation in the dependent variables explained by the model (range from 0 to 1).

Result and Discussion

Description of sample respondents is displayed in Table 2. Majority of AIM participants in both states are women. From total number of respondents, 89.6 percent is female and 2.6 percent is male (7.8 percent is missing data). In Kelantan, all respondents (100 percent) are women. Total respondents from Perak are 1000 (51 percent) and 961 are from Kelantan. It is found that majority of respondents are having formal education. About 10.9 percent (213 respondents) do not have any formal education. 51.5 percent of respondents obtained primary level of education and 26.4 percent obtained secondary level of education (Sijil Pelajaran Malaysia or SPM). About 2.0 percent of them went to Malaysian high schools (Sijil Tinggi Persekolahan Malaysia or STPM/diploma/certificate/pre-university) and 0.1 percent obtained a bachelor degree or higher. Nonetheless, 81.8 percent of respondents are married and only 5.2 percent are single or divorced.

Table 2. Frequencies and Percentages of Respondents by Gender, States, Marital Status, Ethnicity, Levels of Education and Religion

Item		Frequency	Percent
Gender	Male	51	2.6
	Female	1758	89.6
	Missing data	152	7.8
State	Kelantan	961	49.0
	Perak	1000	51.0

Item		Frequency	Percent
Ethnicity	Malay	1727	88.1
	Chinese	7	0.4
	Indian	60	3.1
	Others	3	0.2
	Missing data	164	8.4
Religion	Muslim	1730	88.2
	Christian	4	0.2
	Buddha	10	0.5
	Hinduism	54	2.8
	Missing data	163	8.3
Marital Status	Single/Divorced	102	5.2
	Married	1605	81.8
	Missing data	254	13.0
Educational Level	No formal education	213	10.9
	Primary education	1010	51.5
	Secondary education	518	26.4
	Certificate/STPM/Diploma/pre-university	40	2.0
	First Degree/Postgraduate	2	0.1
	Missing data	178	9.1

Source: Authors' Computation

Nevertheless, the test of relatedness or independence between the variables in cross-tabulation is conducted using Chi-square statistic. The test is conducted to explore the relationship between two categorical variables. It compares the observed frequencies or proportions of cases that occur in each of the categories, with the values that would be expected if there were no association between the two variables being measured. Following are the hypotheses:

Hypotheses 1

H_{o1}: Gender is independent on level of education

H_{a1}: Gender is dependent on level of education

Hypotheses 2

H_{o2}: Gender is independent of marital status

H_{a2}: Gender is dependent on marital status

Hypotheses 3

H_{o3}: Gender is independent of states (either Kelantan or Perak).

H_{a3}: Gender is dependent on states (either Kelantan or Perak).

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Table 3. Cross Tabulation Statistics of Demographic Variables

		Gender		*Pearson Chi-square value*
		Female	**Male**	
State	Perak	949 (94.9)	51 (5.1)	42.456 (sig. 0.000)
	Kelantan	809 (100.0)	0 (0.0)	
Marital Status	Married	1561 (97.4)	42 (2.6)	1.046 (sig. 0.306)
	Single/Divorced	101 (99.0)	1 (1.0)	
Level of Education	No formal education	210 (98.6)	3 (1.4)	2.854 (sig. 0.583)
	Primary education	976 (96.6)	34 (3.4)	
	Secondary education	505 (97.5)	13 (2.5)	
	Certificate/STPM/Diploma/pre-university	39 (97.5)	1 (2.5)	
	Bachelor degree and above	2 (100.0)	0 (0.0)	

Note: Percent in parentheses.
Source: Authors' Computation

The Pearson Chi-square statistics in Table 3 indicate that gender is only dependent on state with p-value (sig.) lower than 5 percent. But gender is independent of level of education and marital status. This implies significant difference of male and female respondents' distribution in either Perak or Kelantan. In fact, all respondents in Kelantan are basically female.

Table 4. Descriptive Statistics on Continuous Variables

Variable	N	Minimum	Maximum	Mean	Standard deviation
Age	1808	19.00	85.00	45.52	11.36
Household size	1955	1.00	18.00	5.96	2.46
Yearly income (RM)	1959	0.00	264000.00	23841.5	21266.3
Yearly Per capita income (RM)	1953	0.00	60000.00	4734.4	5102.7
Duration in AIM (month)	1798	1.00	372.00	56.8	46.8
Ratio of spending to income	1931	0.00	189.48	0.85	5.53
Value of asset (RM)	1774	0.00	420000.00	13412.61	26758.8
Value of loan (RM)	1958	200	22000.00	3533.86	2692.1

Source: Authors' Computation

Table 4 shows the descriptive statistics for the continuous data/variables of the current study. The minimum age of respondents is 19 years old and the maximum age is 85 years old. On average, the age of respondents is 46 years old. As of the household size, the minimum size is one and the maximum size is 18, with the average size of 5.96. It is found that the minimum yearly income received by respondents from AIM program is zero and the maximum of yearly income received is RM 264,000.00. On average, approximately RM 23,851.77 income per year received by respondents. The amount of per capita income per year is also calculated by dividing income per year by household size. The results show that about RM 60,000.00 is the maximum yearly per capita income of respondents, with the mean of RM 4,734.40. As for the ratio of spending to income (after joining AIM), the mean percentage of spending per income is about 85 percent. The minimum value of loan obtained from AIM scheme among respondents is RM200.00 and the maximum is RM 22,000.00. Meanwhile, the value of assets belong to respondents, the maximum is RM 420,000.00. Looking at the standard deviation of the data, it is found that there is less variance of data for age, household size and ratio of spending to income due to small number of standard deviation.

Table 5. Ability of pay zakat from the project returns

Item	Strongly Disagree (SDA)	Disagree (DA)	Neutral / indifferent	Agree (A)	Strongly Agree (SA)
I am able to pay zakat after joining AIM	6 (0.3)	312 (17.3)	451 (25.0)	895 (49.6)	139 (7.7)

Notes: Valid Percentage in parentheses
Source: Authors' Computation

The respondents are asked on their ability to pay zakat since they joined AIM. The results are displayed on Table 5. It is found that majority of participants of AIM are able to pay zakat after they joined the scheme (57.3 percent). However, quite substantial amount of them are not able to pay zakat from the returns of the projects that is about 42.7 percent.

Next, the current study aims to analyze factors contribute significantly to the likelihood (probability) of paying zakat among respondents who received micro-credit from AIM. Adopting logistic regression to predict categorical outcomes with two or more categories, the independent variables can be either categorical or continuous, or a mix of both. The Binary Logistic model is used for the current data, in which the dependent variable has only two categories, one and zero. Value one is recorded to the responses of '1(strongly agree) and 2(agree)' for the survey question 'Do you able to pay zakat every year?' and value zero is recorded to the response of '3(neutral), 4(disagree) and 5(strongly disagree)' on the same question. Demographic variables such as gender, household size, age; marital status, education level and income after involving in AIM program are the independent variables in the model. The study is using 'yearly per capita income (RM)' for income level after joining AIM, which later transformed into natural log. The independent variables are also consisting of dummy variables such as marital status (1=married, 0=otherwise), gender (1=male, 0=female) and dummy of state (1=Kelantan, 0=otherwise) as well as continuous variables such as household size, age, income level, and level of education. The results are displayed on Table 6.

The regression results in Table 6 display significant variables of 'Dummy of state', 'household size', 'education level' and 'per capita yearly income' in the model. The negative

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coefficient (β) of household size, which is -0.101, indicates that an increase in household size, results in a decrease probability of scoring 1 in the dependent variable (ie. paying zakat). The odd ratio (Exp (β)) for household size is 0.904, which could be interpreted that the odds of a person paying zakat decreases by a factor of 0.904, all other factors being equal. The variable of household size, reflected by number of dependents, is however found to be insignificant in a study by Wahid et al. (2005a) and several other studies. Thus, it is expected that for the poor respondents who receive microfinance scheme of AIM, size of family is significant to determine the ability for them to pay zakat from business return. Bigger family size incurs more spending and less income available to make zakat payment.

Table 6. Logistic Regression Results

Independent variables	Dependent variables: Paying zakat	
	B	Exp(B)
Constant	1.857 (1.398)	6.407
Age	0.014 (0.009)	1.014
Dummy Marital Status	-0.072 (0.317)	0.931
Education Level	0.304** (0.131)	1.355
Household Size	-0.101*** (1.398)	0.904
Duration in Aim–Suppose to be AIM	-0.001 (0.002)	0.999
Dummy State	-1.411*** (0.176)	0.244
Ratio Spending to Income	0.131 (0.081)	1.140
Nat. Log Value of Asset	-0.075 (0.061)	0.928
Nat. Log Value of Loan	0.172 (0.140)	1.188
Nat. Log Per Capita Yearly Income	-0.260** (0.122)	0.771
Diagnostic tests		
% correct classification	68.8	
Omnibus Chi-square stat.	111.78***	
Hosmer & Lemeshow Test statistics	7.167	
Cox &Snell R-square	0.129	
Negelkerke R-square	0.174	

Notes: 1. Standard errors are in parentheses;
2. ***statistically significant at the 1% level; **5% level; *10% level.
Source: Authors' Computation

For dummy of state, the coefficient is also significant at 1% level and negative. The negative sign of coefficient implies that the odds of paying zakat declines by a factor of 0.244 for respondents from Kelantan as compared to those from Perak, other things remain constant. The result is as expected as it is well known that Kelantan has large percentage of poor in Malaysia and the recipients of microfinance in this state might not get returns from small business activities as large as in other states that require them to pay zakat income.

The negative coefficient sign of natural log per capita yearly income indicates similar impact. The probability of paying zakat is higher among respondents with lower per capita yearly income as compared to those who have higher per capita yearly income. The negative relationship between income and willingness to pay zakat obtained in this study is somehow contrast to studies by Tahir & Majid (1999), Nor Ghani et.al (2001), Wahid et al. (2005a), and Mahanani et.al (2018) who found positive relationship between these variables but the result is consistent to studies by Jaffar et al. (2011), Firdaus et.al. (2012), and Bakar & Rashid (2010). In Firdaus et al. (2012), there is a tendency that higher income level tends to lead to lower payment made to formal institutions. Bakar & Rashid (2010) found that lesser percentage of respondents pay zakat on income among higher income respondents. In the current study, we perceive that less willingness to pay zakat among those received more income from microfinance return is due to background of the recipients who are poor and they mainly focus on improving their spending from the returns of business activities.

On the other hand, the only positive and significant determinant is education level with the odd ratio more than one. The coefficient reflects that probability of paying zakat is bigger among higher education respondents. The odd ratio (Exp (β)) of 1.355 could be interpreted that the odds of a respondent paying zakat increases by a factor of 1.355 among higher education respondents, all other factors being equal. Similar results obtained by Firdaus et.al (2012) when they found that PhD holders occupy the highest percentage of the respondents paying zakat through formal institution. Several studies (Saad et al., 2010; Jaffar et al., 2011) also indicated the importance of knowledge, reflected by higher education, as a driving factor for paying zakat.

Age, marital status and spending seem to be insignificant variables in the current regression. The insignificant age is also found in studies by Tajuddin et al. (2016) on factors influencing zakah compliance behaviour among youth in Klang Valley, Malaysia. Wahid et al (2005a), on the other hand, show age factor is significant with positive sign. Significant and positive factors of 'married' and 'spending' are also found in this study among Muslims from several states of Peninsula Malaysia. As the current study only focuses on the disadvantages participants of AIM, we foresee that the results are different from studies using alternative sampling. Nonetheless, value of assets and value of loan received also not contribute to the tendency of paying zakat among the respondents. Most of respondents have minimum asset value which basically inherited land and house they are living and the loan received largely used to sustain the current income for living which is very limited to pay zakat. Therefore, in summarization, the probability/likelihood of paying zakat among respondents is determined significantly by small household size, higher education level, lower per capita income and state.

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The classification table, with no predictor in the model, reports 57.7% of correctly classified cases. The inclusion of a set of independent variables does improve the accuracy of prediction to 68.8%. The Omnibus test of Model coefficients are significant (p-value < 0.05) which implies that the model with set of variables used as predictors is better than the model without predictors. The Chi-square statistic is 111.78 with 10 degree of freedom. This is also supported by Hosmer & Lemeshow test of 'goodness of fit' of the model with Chi-square statistics of 7.167 (p-value more than 0.05). Besides, the pseudo R-square statistics (Cox & Snell R-square and Nagelkerke R-square) show that between 13% and 17% of the variability in the dependent variable is explained by the set of independent variables in the model.

Conclusion

The present study looks at the probability of paying zakat among members of AIM, who received micro-credit from Amanah Ikhtiar Malaysia (AIM) to fund micro and small businesses. In methodology, a survey is conducted to collect primary data from a sample of participants of AIM program in Perak and Kelantan. The present study adopts two methods of analysis on the collected data. First, descriptive analysis is conducted with the use of frequencies and cross-tabulation. Second, the study also uses a nonlinear regression model specifically designed for binary dependent variables to analyze factors significantly determine the probability that the respondents pay zakat. Overall, the findings show that gender is dependent on state where the respondents living. But gender is independent from marital status and education level. Results from logistic regression indicate that the probability of paying zakat among respondents is determined significantly by small household size, higher education level, lower per capita income and those respondents living in Perak.

From the findings, the paper resorts to provide policy recommendations that may guide collection of zakat among participants of microfinance scheme under AIM and how the proceeds can be geared towards the needy. The recommendations are: First, there is a need to educate the microfinance participants on zakat requirement and zakat base and be exposed academically to the significance of zakat from spiritual, economic, and social perspective and appreciate its significance towards societal development through talks, seminars and conferences and even media chats. This is very important especially among low educated participants and those who obtain higher income/return from the projects as well as those participants stay in Kelantan. Second, efforts should be taken by both AIM and zakat institutions to well develop good and efficient methods of zakat collection among AIM participants such as yearly income deduction on the returns from projects that exceed *nisab*. These efforts should also be widened to other microfinance participants. Third, policy makers such as government and Zakat Centre must play a more effective and efficient role in distributing zakat income. Once the zakat payers notice the significant roles play by the zakat institutions, they will voluntarily contribute their income to zakat institutions regularly. Fourth, it might be desirable too from AIM's side to stop giving funds to the microfinance participants who fail to pay zakat from returns of their businesses.

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Waqf Forest: How Waqf Can Play a Role In Forest Preservation and SDGs Achievement?

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Abstract. *Previous studies about waqf for forest conservation mostly concentrated on its potential or its prospect for forest preservation or environmental protection. In contrast, a detailed discussion about how to establish a waqf forest to support the SDGs is still noticeably absent. This paper aims to formulate a scheme of productive waqf forests that can help the achievement of Sustainable Development Goals (SDGs). To our knowledge, this is the first paper that provides a scheme of productive waqf-based forest. The present study was conducted using a literature study method and interpretative analysis. The result shows that a productive waqf forest should supply not only intangible benefits but also generate tangible benefits that can be used for the waqf forest development. Both benefits which support some main points of SDGs, such as in reducing poverty and hunger, maintaining climate, health, biodiversity, and water supply, are mainly delivered to the mauquf 'alaihi.*

Keywords: *Islamic social finance, SDGs, waqf, waqf forest*

JEL Classification: D64, G23, Q01, Q23, Z12

Abstrak. *Kajian-kajian sebelumnya tentang wakaf untuk pelestarian hutan sebagian besar terkonsentrasi pada potensi atau prospeknya untuk kelestarian hutan atau perlindungan lingkungan. Sebaliknya, pembahasan rinci tentang bagaimana membangun hutan wakaf untuk mendukung SDGs masih terasa belum ada. Makalah ini bertujuan untuk merumuskan skema hutan wakaf produktif yang dapat membantu pencapaian Tujuan Pembangunan Berkelanjutan (SDGs). Sepengetahuan kami, ini adalah makalah pertama yang memberikan skema hutan wakaf produktif. Penelitian ini dilakukan dengan menggunakan metode studi literatur dan analisis interpretatif. Hasil penelitian menunjukkan bahwa hutan wakaf produktif tidak hanya memberikan manfaat yang tidak berwujud tetapi juga menghasilkan manfaat berwujud yang dapat digunakan untuk pengembangan hutan wakaf. Kedua manfaat yang mendukung beberapa poin utama SDGs, seperti dalam mengurangi kemiskinan dan kelaparan, menjaga iklim, kesehatan, keanekaragaman hayati, dan pasokan air, sebagian besar diberikan kepada mauquf 'alaihi.*

Kata Kunci: *keuangan sosial Islam, SDGs, wakaf, wakaf hutan*

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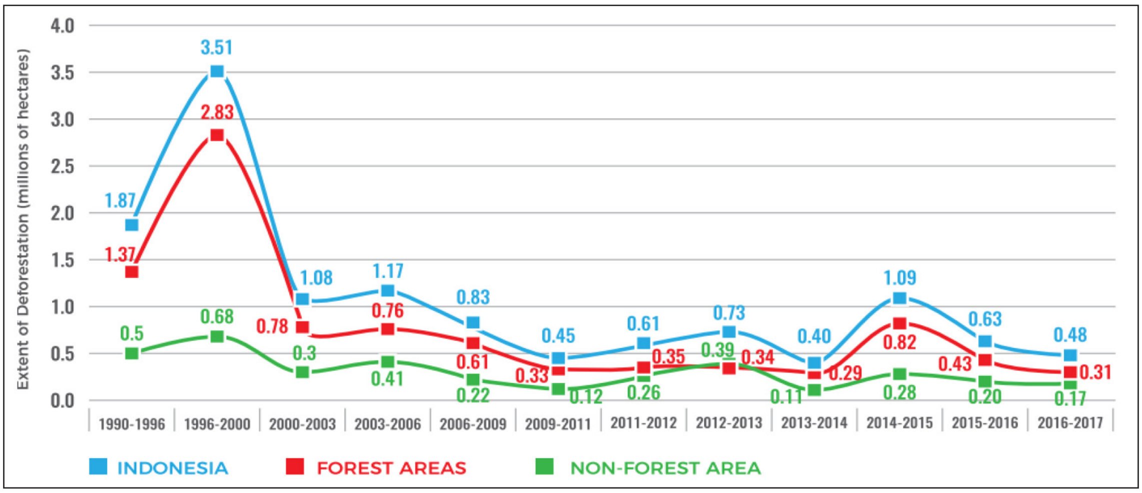
Introduction

The Indonesian forests, as the third-largest tropical rain forest in the world (Margono et al., 2016), should be preserved because it can play a vital role in supporting the achievement of the Sustainable Development Goals (SDGs). In SDGs context, the forest, which is one of the most crucial ecosystems on the planet can generate not only income for the people (supporting SDGs number 1), but also provide food and medicine (supporting SDGs number 2 and 3). Forest also can deliver freshwater and maintain the earth's temperature (supporting SDGs number 6 and 13) and protect sources of biodiversity (helping SDGs number 15) (Seymour & Busch, 2017).

Figure 1. Indonesian deforestation trends, 1990-2017



Source: Ministry of Environment and Forestry (2018)

Unfortunately, deforestation is a problem that keeps happening in Indonesia (Figure 1). From 2009 until 2013, 1.13 million hectares of forests in Indonesia are lost every year. It even said that in 2012, Indonesia had lost its annual primary forest bigger than Brazil, even twice because Indonesia lost 0,84 Mha while Brazil lost 0,46 Mha. Although, in 2017, the deforestation number already decreasing into a 60% drop compared to the previous year (2016), there are still more things to do to conserve forest (FWI (Forest Watch Indonesia), 2018; Hamzah et al., 2018; Margono et al., 2014).

In Indonesia, forest conservation/protection mentioned in the Law of The Republic Indonesia Number 41 of 1999 regarding Forestry. Unfortunately, the Indonesian government's budget for forest management/security is limited, only around IDR 7 trillion/year (around USD 500 million/year). In contrast, the forest area that should be protected is about 124 million hectares. Hence, the budget for forest protection is only about US$4 each year (Herman, 2018). Thus, another source of funding is needed to help Indonesian forest preservation.

Islam has a social finance instrument called *waqf* (Islamic endowment). Genuinely, waqf is mentioned as a part of *sadaqah* and *infaq.* Waqf is "a perpetual or temporary holding of a *Maal* (asset or usufruct) that produces repeated services, products, or revenues or an objective of general or private righteousness" (Kahf, 2008).

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Most Muslim jurists recognize the waqf as perpetual, irrevocable, and inalienable. Perpetuity of the waqf means that it lasts as long as the assets itself because it no longer belongs to the Waqif, but Allah SWT. Irrevocability means once a waqf established, it cannot be denounced. It means that the waqf will stay stable; the beneficiaries cannot be intimidated (because they cannot be prevented from receiving the waqf's income). Inalienability prevents waqf from being changed, sold, granted, and inherited. However, the waqf assets may be exchanged for an equivalent property, or it may be sold, according to the judges grant, to fulfill the goals of the waqf (Al-Anzi & Al-Duaij, 2004). In line with that, if a waqf purpose already fulfilled or not available anymore, the benefits from this waqf should be delivered fo another closest beneficiaries, or it should be utilized for the poor and needy people (Kahf, 2003).

Waqf benefits can be described as extensible, and it can be utilized to respond to social needs and urgencies. One of the beneficiaries of the awqaf is the natural environment (Al-Anzi & Al-Duaij, 2004). The trees, woodlands, forests, and all biodiversities in that area are the essential things to be conserved in the environment (Ozdemir, 2002). Budiman (2011) stated that waqf might be influential in overcoming environmental problems in Indonesia. In the next following years, it is projected that the management of waqf in Indonesia will pay more attention to environmental issues. Together with the problems of food sovereignty and maritime affairs, ecological commitments have been declared as one of the targets for the use of waqf utilizations (Ministry of Religious Affairs, 2019).

Waqf could be introduced into forest protection and regeneration program in terms of funding (Hasanah & Hakim, 2017; Yaakob et al., 2017). Waqf is *"holding the assets and donating the yields."* Waqf has several unique characteristics that suitable for developing forest preservation, namely: waqf cannot be sold *(laa yubaa'),* cannot be granted *(laa yuuhab),* and inherited *(laa yurats)* as well As-Sa'di, 2002). In terms of waqf for forest conservation, a forest that became a waqf land will be sustainable, because waqf rule forbids to change the land use to another use until the end of the world.

Waqf forest can be defined as a forest developed on waqf land (Ali & Jannah, 2019). It can be acquired from a waqf land or a cash waqf collected from society. The waqf forest is not a new concept in Islam. Even though it was not a forest, the first waqf made by Rasulullah SAW's friends was waqf of the date palm plantation in Khaibar, by Umar ibn Khattab (Awang et al., 2018). Then, based on historical research, it is known that in the Ottoman period, Turkey, there was an Evkaf Forest (waqf forest), covering more than 107 thousand hectares (Dursun, 2007; Özden & Birben, 2012).

The first waqf forest in Indonesia was established in 2012 in Aceh Province called "*Hutan Wakaf Jantho*" (Waqf Forest Jantho). They invited people to donate cash waqf and used it for buying critical land. The land will be converted to a waqf forest (Hutantersisa.org, 2018). Some volunteers manage the waqf, identified themselves as Komunitas Hutan Wakaf. "*Wakaf Leuweung*" or Waqf Forest was established by the local government of Bandung Regency. Similar to Aceh, the government persuaded the people in Bandung Regency to donate a cash waqf to build a waqf forest in a critical land (Humas BWI, 2013). The newest waqf forest was at Cibunian Village, Pamijahan District, Bogor Regency. This waqf forest was established by some scholars from IPB University, Bogor West Java (Ali, 2020).

Waqf research for Muslim society is essential and potential for elaborating the potentials of waqf in strengthening the ummah's economy (Rusydiana & Al Farisi, 2016). Previous research stated that waqf could be used to support environmental and forest sustainability. Budiman (2011) stated that waqf as a charitable institution in Islam has potentials and could be employed as a vital instrument for environmental protection. Also, Yaakob et al. (2017) argued that waqf could be introduced into forest conservation and regeneration program due to inadequate fund for forest regeneration and development. Utilize varied function of waqf to protect the environment are demonstrated in Kuwait, Brunei, Indonesia, Singapore, and also the United Kingdom.

Hasanah & Hakim (2017) also stated that the waqf scheme is also possible to buy spacious land for the urban forest and finance the cultivation and the maintenance. Based on those articles, we can conclude that waqf as an instrument of Islamic social finance can be used as a potential and prospective source of funding for saving the tropical rain forests in Indonesia.

Unfortunately, previous studies about waqf for forest conservation mostly concentrated on its potential or its prospect for forest preservation or environmental protection, for example, its potential and possibility of waqf that can be used for forest conservation and maintenance. Also, detailed discussions about how to establish a waqf forest to support the Sustainable Development Goals are still scarce, especially in Indonesia.

Therefore, the objective of the research is to formulate a scheme of productive waqf forest, which describes the flow of a productive waqf forest that can support several main goals of SDGs. Based on the research objective, the research question in this study is how a productive waqf scheme can be formulated and described, started from the beginning until the *mauquf 'alaihi* can utilize the benefits of the waqf forests. At the same time, it can support several main goals of SDGs. To our knowledge, this is the first paper that provides a scheme of productive waqf-based forest.

This study is essential to give insights for more researchers to explore the potential of waqf to finance the environment and forestry sectors in the form of a productive waqf forest scheme. The results of the study also will be necessary as a reference for the development of waqf forest studies in the future, especially for the relevant stakeholders, such as regulators, academics, practitioners, and communities.

This paper is organized into five sections. First, it describes the background and the aim of the study. The next part is the research methodology. Then, the result and discussion of the study are presented, starting with a productive waqf scheme. It followed by the details of every part of the scheme based on the stakeholders and their relationship. Finally, the article ends with a conclusion and recommendations for future studies.

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Methods

The type of research is exploratory qualitative research. Exploratory research deals with a phenomenon, focused on collecting primary or secondary data to interpret them (Shukla, 2008). This research is using secondary data, with a literature study method to collect the data. The secondary data of this research are gathered from books, journals, working papers, reports, web pages, and other documents relevant to the topic of waqf, forest, SDGs, and other related issues.

The data analysis method of this research is interpretative analysis. There are three stages in interpretative analysis, namely deconstruction, interpretation, and reconstruction (Miles & Huberman, 1994). The first step is a deconstruction, including separating the secondary data into some elements to be analyzed (Sargeant, 2013). The concept of productive waqf forest and SDGs are being deconstructed to see what is included in this concept.

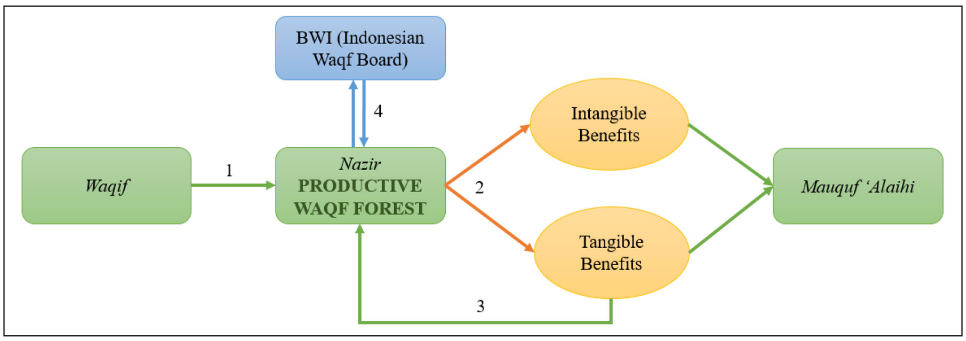
Interpretation is the next step, proposed to interpret the data elements. In this step, every aspect also will be compared across another to find their connections (Sargeant, 2013). In this research, this part includes finding the relationship between the elements of a productive waqf forest, for example, stakeholders involved. The last part is a reconstruction, intended to reconstruct those elements in the right position according to their relationship and explain it principally based on the previous theory and knowledge (Sargeant, 2013). In this research, the reconstruction of the data will be presented in the form of a productive waqf forest scheme.

Result and Discussion

Productive Waqf Forest Scheme

Figure 2 shows a productive waqf forest scheme. First, the *waqif* gives *waqf* to the *nazir* to be managed. The *nazir* will manage the waqf forest into a productive waqf, which has tangible and intangible benefits/profits. Some of the tangible advantages will be used for the *waqf* development managed by *nazir*. The rest tangible and intangible benefits are dedicated to the *mauquf'alaihi.*

Figure 2. Productive Waqf Forest scheme



The tangible profit sectors are *da'wah,* education, health, social, economy, and ecology, while the intangible profits are fresh air, clean water, energy, soil protection, biodiversity, and aesthetics. By dedicating those benefits for the beneficiaries, a productive waqf forest is supporting the SDGs, especially some goals regarding environmental aspects.

Al-Anzi & Al-Duaij (2004) stated that Islamic waqf involves four human elements, namely waqf donor (*waqif*), trustee, or waqf manager (*nazir*), waqf beneficiaries (*mauquf alaihi*), and judge (*qadi*). The role of BWI (Indonesian Waqf Board) is vital for the controlling function. The Nazir of Waqf forests must provide regular reports to BWI regarding the productivity and stability of the waqf assets under its management.

Waqif (Waqf Donors)

Waqif (donor of waqf) is an individual (or organization) who dedicated his/her assets (can be in the form of property or money) as a waqf (Ali et al., 2018; Khalfan, 2014). Waqf has a role in purifying the *waqif*'s heart, leading him or her to soul purification, descendant purification, properties purification, and sense purification (Huda et al., 2017). Waqif can be divided into two groups. They are individual waqif and organizational waqif. The organizational waqif can also split into two different groups; they are profit organization and non-profit organization. The profit organization can allocate their CSR (Corporate Social Responsibility) into a waqf. On the other hand, the non-profit organization such as zakat or Islamic philanthropy organizations can allocate their collected charity to finance waqf forest.

The waqf development shreds of evidence showed that the waqif had the authority to choose on various types of waqf benefits, not only religious but also general projects (Pitchay et al., 2014). The environment is now under serious threat, and *waqif*s are legally entitled to and indeed are encouraged to direct all part of the *waqif*'s income in the service of environmental protection (Al-Anzi & Al-Duaij, 2004). Pitchay et al. (2014) have researched about Malaysian cash waqif's priority in terms of waqf development. Although the highest priority is still education, some *waqifs* already considering the environment as their intention for waqf. Al-Anzi and Al-Duaij (2004) stated that it is necessary to convince the *waqif*s about the importance of environmental protection and spending money to protect the environment.

Nazir (Waqf Manager) of a Productive Waqf Forest

According to Law No 41 of 2004 about Islamic endowment, *nazir* divided into three, namely: individual *nazir*, organizational *nazir*, and legal entity *nazir*. *Nazir* is a stakeholder that most responsible for the waqf assets, not only the waqf assets itself but also the benefits and the development. A *nazir* can be categorized as trustworthy (*Amanah*) if they have some characteristics, namely responsibility, efficiency, and professionalism (Ali et al., 2018; Kasdi, 2014).

Several things need to be done by *nazir*, such as: taking care of the certificate of the land ownership (for waqf land), advocating the endowment assets which are still disputed, and strengthening the productivity of the waqf property (Kasdi, 2014). W*aqif*'s statement bounds the nazir. Once the *waqif* stated that environmental protection should be included in his/her pledge deed, the *nazir* is obliged to follow such requirements and spend the income

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to realize this purpose. An environmentalist *nazir* will manage the waqf in a way that helps to conserve and preserve the natural environment and contributes the revenue accordingly (Al-Anzi & Al-Duaij, 2004). Besides, the *nazir* of the waqf forest should understand the basic knowledge of how to maintain forests and is an essential competency.

The benefits of waqf forest will be utilized not only by the *mauquf'alaihi* but also by the region because it will protect the natural ecosystem and environments. Forests absorb carbon dioxide, and it means forests help controlling air pollution. Forests also guarded the natural flow of the water by keeping the balance of the rain. For the land itself, forests can boost soil fertility; at the same time, it prevents land sliding and soil erosion (Abad-ur-Rahman & Ayaz, 2015; Jain et al., 2017).

Other intangible profits that should be considered are biodiversity, beautiful view, the protection from weather change, and carbon sequestration to the farmland and livestock. Last but not least, some benefits in social and cultural areas also could be utilized from the forests, especially by the local community (Bull, 2010). Beneficiaries of the waqf may be relatives, non-relatives, or public services (Al-Anzi & Al-Duaij, 2004). The recipients can be classified as direct beneficiaries and indirect beneficiaries. Direct beneficiaries are the person or the things that have been mentioned in the waqf deeds. For example, the family of the donor, the orphanage, the mosques, religious schools, or the library. Indirect beneficiaries are referring to the people who receive indirect benefits from the waqf assets, such as the people who work in the waqf building, the local people who live surrounding the waqf land, and use the facilities of the waqf properties (Ali et al., 2018).

For humankind, forests give abundant economic benefits. An example of the economic benefits includes as a source of many industrial products (for instance, sawn timber or Roundwood, which can be transformed into a lot of products such as furniture, paper, etc.). It also includes fuel-wood (such as converted woods into charcoal) and non-wood forest products (for example, plants for food, medicines, and others). Forests also provide employments, especially for the local people (Bull, 2010).

In the waqf forest, apart from the forest products like wood and NWFP (non-wood forest product), waqf forest can be managed into ecotourism, forest honey producers, or agriculture integrated with forestry in the concept of agroforestry. The profits can be used to cover management and development costs, including acquiring new forest lands so that the waqf forest will be more extensive in the future (Ali, 2018).

Similarly, in the waqf forest context, the tangible profits from waqf forests should be delivered partly for the waqf management managed by *nazir*, and the rest is dedicated to the waqf beneficiaries (*mauquf'alaihi*). The tangible profits for the waqf beneficiaries can be given in the form of several activities in the field of da'wah, education, health, social, economy, and ecology.

As stated by Shaikh et al. (2017), flexibility in the regulations of waqf allows it to serve beneficiaries immediately or through monetary institutions and to serve a vast vary of social services. The recipients of the waqf forest can utilize the forest form several activities in the field of da'wah, education, health, social, economy, and ecology. The examples of the programs can refer to the Zakat Village Index (ZVI) developed by BAZNAS (2017) and the concept of Sustainable Forest Management (SFM) established by FAO (2019a).

According to ZVI, the indicators of the da'wah benefits are namely, 1) providing religious facilities and infrastructure, 2) increasing religious understanding from the community, 3) increasing religious activity and community participation. For the education benefits, the indicators are, 1) increasing the level of education and literacy, and 2) providing educational facilities and infrastructure. For the health benefits, the symbols are, 1) expanding the health quality of the community, 2) providing health services, and 3) encouraging community to have health insurance (BAZNAS, 2017).

In terms of Sustainable Forest Management, there are several benefits that the beneficiaries can get from the waqf forest, namely economic, social, and ecological benefits. For the economic/financial benefits, the examples are by harvesting a non-wood forest product (NWFPs) and the marketing of forest environmental services (FAO, 2019b). For the social benefits, mainly for the needy, wooded area and tree assets furnish not only food and gasoline for cooking and heating but also medicine, haven, and feature as security nets in crises or emergencies. Employment and income generated via the harvesting, processing, and promotion of woodland items and environmental services also essential in many rural areas (FAO, 2019c). For the ecology benefits, forests can assist in climate-change mitigation and adaptation, biodiversity, even soil and water conservation (FAO, 2019a).

Intangible benefits felt from the forest can encourage visitors to come and participate in protecting the forest. For example, a study in Munich said that there are several reasons someone visits the forest in the city and the village. For example, dog walking (animal-walking), fresh air, experience, escape from everyday life, health, good time with family and friends, cooling, sport, happiness, and tranquility (Meyer et al., 2019). Forests also contribute to disease prevention. A study by Garg (2019) stated that a 1% increase in the primary forest could reduce the 10% chance of malaria outbreak in Indonesia.

Tangible Benefits for Waqf Forest Development

A waqf should be productive. Nowadays, productive waqf projects are needed to improve prosperity. A productive waqf means that the waqf assets are managed to produce profits; it will be distributed to the *mauquf 'alaihi* in the form of charity and alms. It is comparable to create productive business sectors to ensure that the benefits of the waqf assets can be used and developed optimally (Huda et al., 2017).

Thaker & Thaker (2015) give an example of Waqaf An-Nur Corporation Berhad, one of the corporates who manages waqf assets and shares its benefits. Their profit from the waqf assets (CSR from Johor Corporation) is delivered into some parts. 70% of the profits are for re-investment activities by Jcorp, 25% for *fisabilillah* (health services, programs at the masjid, construction of masjid, social development, human capital development, theater Imam Bukhari, and Orang Asli), and the last 5% is for State Islamic Religious Council of Johor.

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In the waqf forests, some tangible benefits need to be returned to the *nazir*. This benefit will be used by *nazir* for the development of the waqf forest. For example, if agroforestry is developed in the waqf forest, a portion of the profits from the sale of non-timber forest products will go to *nazir*. These funds can be used to pay workers or buy new land to be represented and developed as the next waqf forest.

BWI (Indonesian Waqf Board)

BWI is an independent institution that has a big responsibility in advancing and developing waqf in Indonesia, which has been regulated in the law. BWI was also responsible for intensive coaching and training for *nazir* (Ali et al., 2018). Some tasks and authorities of BWI are coaching the *nazir* in maintaining and developing waqf, maintaining and developing national waqf assets, and giving agreement or permission for the change of use or status of waqf assets. BWI also responsible for discharging and changing the *nazir*, providing an arrangement for exchanging waqf assets, and offering suggestions and consideration to the government about policymaking in the field of waqf (Iswanto, 2016).

Other Related Stakeholders

Apart from the main stakeholders, some other related stakeholders need to be considered in the development of the waqf forest. They are DSN-MUI (as sharia-compliant), some ministries (as regulators), academicians, landscape architects, and community.

DSN-MUI (National Sharia Council of Indonesian Ulema Council)

The stakeholder involved in Sharia-compliant of waqf forest in Indonesia is DSN-MUI. The DSN-MUI was founded to accommodate the aspirations of Muslims regarding economic issues and encourage Islamic teachings utilization according to Islamic law in the field of economics and finance (DSN-MUI, 2019). In terms of waqf forest, the role of DSN-MUI is to conduct a fatwa about whether waqf forest is allowed according to the Islamic law, and also conduct a fatwa about cash waqf that used to fund the waqf forest. Shafii et al. (2015) stated that the operations of sharia-compliant institutions are essential to be conducted that a waqf does not contradict sharia in terms of its strategic and operational policies, investment policies, and human resources policies.

Ministry of Religious Affairs, Ministry of Agrarian Affairs and Spatial Planning, and Ministry of Environment and Forestry

Shafii et al. (2015) stated that aspects of regulations are required to protect the rights of the stakeholders of waqf (donor, trustee, beneficiaries, employees, and the regulator itself). According to the statement, in the context of waqf forest, at least there are three ministries involved in the development of a productive waqf forest. They are the Ministry of Religious Affairs, the Ministry of Agrarian Affairs and Spatial Planning, and the Ministry of Environment and Forestry. Each of them has a different role as a regulator.

Indonesia is a country of law. Therefore, the Ministry of Religious Affairs has an essential role in determining various regulations related to waqf. Based on Ministry Regulation No 33 of 1949 jo. No 8 of 1950, it is stated that one of the duties of the Ministry of Religious Affairs is to investigate, determine, register, and oversee the maintenance of waqf assets (Abdullah, 2014). Waqf forest as a form of waqf must be legally registered with the Ministry of Religious Affairs. This registration was carried out by way of making an act of waqf pledge by the Waqf Pledge Deed Official (PPAIW) in front of two witnesses, conducted at the nearest Religious Affairs Office. After the Waqf Pledge Deed issued, PPAIW will deliver it to the related agencies.

By definition, waqf forest can be categorized as waqf in the form of land, which is designated as forest for environmental sustainability to improve public welfare. It is in line with the function, purpose, and purpose of waqf assets (Setyorini et al., 2020). Therefore, the National Land Agency (BPN), on behalf of the Ministry of Agrarian Affairs and Spatial Planning is crucial for the final legalization process. After the Waqf Pledge Deed from the Religious Affairs Office issued, the nazir should propose a land waqf certificate to the National Land Agency. The Ministry of Environment and Forestry also has an essential role. It is regarding the land status that will be endowed as a waqf forest. The land should not belong to the state, and it should not be located inside the Forest Area.

Academics (Scholars)

Academics can be involved as well for the development of waqf forest. In 1991, the United Nations Educational Scientific and Cultural Organization (UNESCO) wrote that academics in a higher education level could use their knowledge at the service of society, to create a better world. They should adopt a more dynamic approach, proactive to meet society's needs. For the waqf forest, the role of the academician can be in the form of conducting some researches that may generate some suggestions which can improve the quality of the waqf forest.

Landscape Architect

A Landscape architect can be involved in the process of planning and designing a waqf forest. A Forest landscape plan should describe the relationship between the design and the existing features, mention the basic and the process of generating the design concept, and every object's visual quality. For example, there should be any different areas on the land-based on its functions, either as a planting area with silvicultural systems, or conservation and recreational areas. Some forests can be developed as a woods area that can be harvested while the others managed as wilderness (Gardenvisit.com, 2019).

Community

In the developing countries, especially for the rural population, community forest management has been determined as one of the best options in declining deforestation and improving the local people's prosperity at the same time (Santika et al., 2017). Some factors

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that influence the community to participate in protecting the forest are physical conditions, availability of resources and farmland, village remoteness, also the awareness of deforestation and the need for food security (Thandar & Yeo-chang, 2019). In line with that, to maintain the contribution of the community in waqf forest management successfully, it is crucial to understand how waqf forest can contribute to the society, especially for their wellbeing and livelihoods, and also for the natural environment.

Waqf Forest and Sustainable Development Goals (SDGs)

As mentioned in the previous part, a productive waqf forest will have both tangible and intangible benefits. Some of the physical benefits will be used for the waqf development. Meanwhile, the rest of the tangible and all of the intangible benefits are dedicated to the *mauquf'alaihi*. In the context of SDGS, Seymour & Busch (2017) stated that forest could support some of the SDGs points, namely SDGs number 1 "no poverty," 2 "zero hunger," 3 "good health and wellbeing," 6 "clean water and sanitation," 13 "climate action," and 15 "live on land."

As stated by Ali (2018), one of the ideas of the development of productive waqf forests is to practice a concept of agroforestry, which is integrating between agriculture and forestry programs in the same area. There have been many studies on the advantages of planting with agroforestry methods compared to monocultures. For example, cocoa-coconut agroforestry has been shown to have better environmental performance in every aspect rather than cocoa monoculture (Utomo et al., 2015). Agroforestry systems also have already been proven can increasing the richness of biodiversity, especially in the fragmented landscapes (Haggar et al., 2019).

SDGs allow multifunctional land uses, so applying agroforestry is still in line with SDGs. The concept of agroforestry may help alter climate change (SDG 13); at the same time, it brings positive vibes for food (SDG 2), energy (SDG 7), and water issues (SDG 6). Agroforestry also contributes in increasing human health (SDG 3), and healthy terrestrial ecosystem (SDG 15), and also contribute to economic progress (SDG 1) (van Noordwijk et al., 2018). In line with this, Waldron et al. (2017) stated that on-farm trees could generate enough amount of fuel-wood, so it will lower the urge to destroy natural forests. At the same time, it also can save a woman from a smallholder family to walk very distant for searching firewood, produce some farm labor to work with, and it can be another source of income (SDGs 3, 4, and 5). The supply of fuel-wood from the on-farm activities also contributes to providing an alternative source of energy (SDG 7) for rural communities, also enhances biodiversity and ecosystem services (SDG 15), along with the mitigation of climate change (SDG 13).

Another idea of the productive waqf forest development is to make it into ecotourism. As stated in Regional Regulation of West Java Number 10 of 2011 regarding protection and empowerment of forest village community (2011), it is possible to use the forest for other activities such as ecotourism as long as it did not conflict with the primary function of the forest. It should be beneficial for the local community around the forest. Kiper (2013) describes ecotourism, as "an alternative to tourism, involves visiting natural areas to learn, study, or to carry out environmentally friendly activities, and enable the economic and social development of local communities."

Ecotourism can establish an enabling environment and developing a community forest. It can encourage business success, resulted in some excellent outcomes, including empowerment of society. Access to forest resources can generate additional sources of income (Katila et al., 2017). Tourism is included in three parts of SDGs, namely Goal 8 on "economic growth and jobs," Goal 12 on "sustainable production and consumption," and Goal 14 on "life below water." But overall, sustainable tourism (including ecotourism) can become one of a significant alternative to achieve all of the 17 SDGs (UNWTO, 2018).

Conclusion

This paper aims to establish a scheme of productive waqf forests for supporting the achievement of Sustainable Development Goals (SDGs). In the present study, we formulate a productive waqf forest scheme which is involved in some crucial stakeholders, namely *waqif, nazir*, *mauquf'alaihi,* and Indonesian Waqf Board (BWI). Some supporting stakeholders are also discussed in the scheme. A productive waqf forest means that some of the tangible benefits of the *waqf* forest should be utilized for the *waqf* development, managed by the *nazir*, and the rest of the benefits, tangible and intangible, are allocated for the *mauquf'alaihi*. The productive *waqf* forest scheme also will support some main points of SDGs, such as reducing poverty and hunger, maintaining climate change, sustaining a healthy life, preserving biodiversity and water supply, also fostering economic growth and sustainable consumption and production.

Two recommendations can be put forward in this research. First, for waqf forest managers, waqf forests should be managed productively, so that waqf forests provide not only intangible benefits (such as ecological benefits) but also tangible benefits (such as economic benefits). The waqf forest management scheme developed in this study can be used as a guide. The development of tangible benefits will encourage communities around waqf forests to preserve waqf forests because these forests are the source of their livelihoods. Agroforestry can be applied to obtain both benefits. The application of agroforestry to waqf forests can be examined in future studies. Second, for the government, although waqf forests continue to grow, the term waqf forests have not been found in regulations in Indonesia. Waqf forests are not yet known in forestry regulations. Rules governing waqf forests are needed to provide a legal basis for the status of waqf forests. It is also essential that waqf forests developed by the community can also be recognized by the state, particularly by the Ministry of Environment and Forestry of the Republic of Indonesia. Studies on this subject can also be developed in further research.

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Zero Waste Accounting for Islamic Financial Institutions in Indonesia and Its Role in Achieving Sustainable Development Goals

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Abstract. *This study aims to propose a model of Zero Waste Accounting in Islamic Financial Institutions in Indonesia and how it is relevant to the achievement of Sustainable Development Goals (SDGs). Due to the nature of the research which is exploration thus the research adopts interpretative approach which is essential to validate the research with "convincingness" approach rather than positivist measures of the reliability, validity of data and the generalization of results. The finding documents that Zero Waste Accounting is in vein with the spirit of Maqashid ul-Shariah that has been embedded as a part of the purpose of Islamic financial institution establishment. Statement of Sources and Uses of Zero Waste Accounting should become one of the additional disclosures. The paper sheds a light the need on Zero Waste Accounting for the accounting standard setters.*

Keywords: *zero waste accounting, Islamic financial institutions, SDGs*

JEL Classification: G20, G52,Q56

Abstrak. *Penelitian ini bertujuan untuk mengusulkan model zero waste accounting di lembaga keuangan syariah di Indonesia dan bagaimana relevansinya dengan pencapaian pembangunan ekonomi berkelanjutan (SDGs). Penelitian ini bersifat eksplorasi maka penelitian mengadopsi pendekatan interpretatif yang penting untuk memvalidasi penelitian dengan pendekatan "meyakinkan" daripada ukuran positivis dari keandalan, validitas data dan generalisasi hasil. Temuan penelitian ini mendokumentasikan bahwa zero waste accounting sejalan dengan semangat Maqashid ul-Shariah yang telah tertanam sebagai bagian dari tujuan pendirian lembaga keuangan Islam. Pernyataan Sumber dan Penggunaan zero waste accounting harus menjadi salah satu pengungkapan tambahan. Makalah ini menyoroti kebutuhan zero waste accounting untuk penentu standar akuntansi.*

Kata Kunci: *zero waste accounting, lembaga keuangan syariah, SDGs*

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Introduction

Islamic Finance Development in Indonesia has been growing rapidly especially during 2016-2017 as presented in the Table 1. However, it would be reversed in 2020 as Ministry of Finance predicted the impact of Covid-19 would diminish Indonesian economic growth to 2.3% or even -0.4%. Since the economic activities are diminishing, Islamic banking would face tight collection or high Non-Performing Financing (NPF) by the end of the year.

Table 1. Assets of Islamic Finance in Indonesia (IDR Billion)

Industry	2015	2016	2017	2018	2019
Islamic Banking	296,262	356,504	424,181	477,327	524.564
Islamic Insurance	26,519	33,244	40,606	41,959	45,453
Islamic Stock market capitalization	2,600,851	3,170,056	3,704,543	3,666,688	3,744,816
Outstanding Tradable Sovereign Sukuk	255,794	372,096	512,339	605,809	3,805,478
Outstanding Non-Tradable Sovereign Sukuk	41,781	39,282	39,221	40,643	209,325

Source: various sources

As for Islamic insurance, it showed more positive growth from 2018 to 2019 however, again, Covid-19 would hit the opportunity of its travelling insurance significantly as 300,000 – 500,000 umrah travellers were not allowed to perform umrah to Saudi Arabia since end of February due to the fear on contagion of Covid-19 (Republika, 2020). Islamic stock market capitalization would suffer even further as the trading has not been so favorable, high capital outflow and low market confidence. From government side, Sukuk would be then a heavy burden to pay back the rental fee to the investors. The commercial purpose of IFIs should be combined with its social purpose or known as the integration between Islamic Commercial Finance and Islamic Social Finance.

Commercial purpose is important part in IFIs to ensure its going concern principle and social finance is essential to balance the commercial motive with sharing in the economy. These both would then address completely to the urgency of SDGs. For instance, how can we achieve "Reduce in Equalities" the 10th SDG objective if there is no commercial purpose to empower people in economy, and how can we target "Clean Water and Sanitation" the 6th SDG objective if there is no social finance involved such as the execution of zakat, infaq, shadaqah, waqf.

Environmental issues appeared as trending issues that have been promoted from almost every sector institution to achieve SDGs for instance in every World Economic Forum. The report places the economy and environment as the world's main risks. Both have a connection where it is believed that environmental destruction is caused unsustainable industrial governance has eventually a negative impact to the global economy. This is what drives the strengthening efforts reconstruction of development policies where there is a balance between efforts encourage economic growth, social equity and environmental preservation life. However, when compared to many other economic sectors, IFIs do not bear the same consumption of energy, water, and paper usage. Nevertheless, all IFIs play an intermediary

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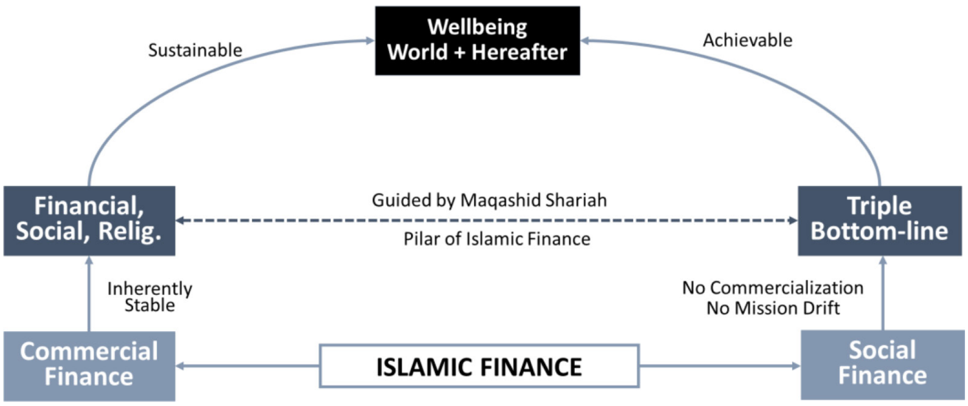
role in the economy that are very relevant to the environment because they can provide funding that is related to energy (See Figure 1).

Due to the vital role of environment in the eye of Islam, thus IFIs should develop more sustainable products, such as environmental, social, or ethical investment funds. Specifically, the label would be: "Zero Waste Islamic Financial Institutions", to replace "Green Banking" that has been popular earlier. As such, encouraging environmentally responsible products and services as well as activities should be one of the responsibilities of IFIs. Furthermore, all IFIs should become zero waste oriented in their activities that will be mutually beneficial for banks, industry and the economy. Biswas (2011) argues that the concept of green banking (similar effort to zero waste) will ensure the greening of the industry but also will improve the quality of bank assets in the future.

Figure 1. Islamic Finance Perspective (Commercial Finance and Social Finance)



Source: Ascarya (2017)

The concept of green banking is defined as promoting environmentally friendly practices and reducing carbon footprint that involves a two-pronged approach (Islam and Das, 2013). First, green banking focuses on the green transformation of all banks' internal operations. This means that all banks must adopt appropriate ways to utilize renewable energy, automation and other measures to minimize the carbon footprint of banking activities. Second, all banks must adopt environmentally responsible financing; consider project environmental risks, before making financing decisions; and in particular supporting and encouraging the growth of future 'green' initiatives projects.

Some countries have applied such concept of green banking, for example Bangladesh, India, and South Korea. There are 45 banks in Bangladest that have formulated policy for green banking, 46 banks have formed a Green Banking unit, and 41 Banks have introduced a Green Office Guide. However, the research conducted by Islam & Das (2013) conclude that Bangladesh is one of the most climate change vulnerable countries to climate change in the world. From the overall discussion, it can be said that green banking practices in Bangladesh are not at a satisfactory level. It is supported by research by Hossain et al (2016) where Islamic banks in Bangladesh made some green banking categories but not all banks present their full reports as shown on the following Table 2.

Table 2. Number of Islamic Banks in Bangladesh Reporting Green Banking Issues

No	Items	2011	2012	2013
1	Energy efficiency/savings	6	7	9
2	Electricity consumption/saving	5	7	8
3	Gas/fuel consumption	4	5	7
4	Water consumption/saving	5	7	8
5	Paper consumption/saving	5	6	8
6	Green finance	4	7	8
7	General statement on climate change and global warming	7	6	9
8	Mentioning of carbon emission or footprint	2	3	5
9	Climate change responsibility	5	5	7
10	Climate change funds	5	7	6
11	Establishment of green banking unit	4	7	8
12	Establishment of green banking policy	5	8	8
13	Green banking products	5	5	5
14	Online/mobile/SMS banking	6	8	9
15	Social awareness creation	5	7	8
16	Sector specific green banking policy	1	4	5

Source: Hossain et al. (2016)

In Indonesia itself, the monetary authority -Bank of Indonesia- has conducted some regulations supporting this issues, thus the banking sector must have sustainability report as proving that the banks including Islamic banks also contribute to achieve SDGs. For example Bank of Sharia Mandiri (BSM) where it is committed to distributing economic values for stakeholders through employee welfare, government taxes, zakat and community welfare funds. In its 2018 Sustainability Reporting, BSM has managed to achieve Mudharib fund management revenues of Rp7.69 trillion, an increase of 5.2% compared to the previous year of Rp7.29 trillion (BSM, 2019). BSM also supports sustainability with their product portfolio which is to be disclosed to support the bank's commitment in innovating service products that support sustainable finance and maintaining low Non Performing Finance (NPF) performance. The development of a sustainable financial product portfolio has an impact on sustainable business growth as well as contributes to the success of national development through financing in strategic economic sectors.

In committing finance sustainability practices by considering environmental aspects, BSM prioritizes financing for prospective customers or debtors who are evaluated to carry out environmental preservation. On the other hand, the bank avoids financing any business that does not meet environmental requirements (Environmental Impact Assessment). BSM did not have a voting policy regarding environmental or social issues, thus, to ensure that prospective customers with their business prospects meet the green finance criteria, BSM evaluates technical/production aspects through analysis of environmental impacts that

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questions: first, pollution in the production process; second, efforts to mitigate pollution; third, complaints from residents in the local area; 4) Practicing government regulations.

For prospective customers in the palm oil industry, BSM has set specific requirements that have to be met, including being certified with Indonesian Sustainable Palm Oil (ISPO) or Roundtable Sustainable Palm Oil (RSPO). For registered customers of the oil palm industry who had previously being funded yet had not being certified with ISPO or RSPO, the Bank has appealed to the the customers to immediately proceed the ISPO or RSPO certificate. It means, for corporate segment is required to meet the Company Environmental Performance Rating (PROPER Rating) at least at 'Blue' or 'Green' rating. The achievement of 'Blue' PROPER reflects the company's compliance with environmental regulations. Based on the screening process related to the compliance of the corporate segments toward Green Finance criteria, financing products that may be categorized in the "green portfolio" included renewable energy power projects. However, it is clear that Bangladeshi and Indonesian Islamic financial institutions (in this case Islamic banks) limit their report to green banking instead of Zero Waste Accounting. The awareness on Zero Waste Accounting and SDGs highlight are not specifically mentioned.

This paper will address three research questions; How are the Relations of SDGs, Islamic Finance and Zero Waste Accounting?; How Relevant the Zero Waste Accounting for Islamic Financial Institution?; How is the proposal of Zero Waste Accounting for Islamic Financial Institution?. This paper has main objective to propose the zero waste accounting for the Islamic financial institution. This paper consists of several sections. Section Two explains the methodology, Section Three explain deeply the effort to answer research question. Lastly, the paper suggests the conclusion and implications of Section Five.

Method

This paper adopts interpretative approach which is essential to validate the research with "convincingness" approach rather than positivist measures of the reliability, validity of data and the generalization of results. The originality and critical interpretation combined with the "convincingness" approach is expected to describe the procedural validity of accounting research as previously proposed by Alsharari & Al-Shboul (2019). As this paper has a proposal to accounting standard setters for disclosing Zero Waste Accounting in IFIs, in which is it is a part of *hifdzul 'alam* (protecting the environment) therefore it is appropriate if this paper adopts *Maqāsid al-Shari'ah* framework in its discussion.

According to Abdurrachman (2008) mechanism to issue a ruling can be through several ways such as *lil hajāh* (based on needs), *lil mashlahah* (based on welfare of society), and *lil maqāsid al-shari'ah* (based on objectives of Sharia). Whichever way is chosen, the scholars must refer to the main sources of law i.e. Qur'an and Sunnah. The commonalities have existed among IFIs that they must operate under Islamic ethical business framework drawn by Sharia underpinning (Haniffa & Hudaib, 2007). Thus, they should disclose information in accordance with sharia standards and sharia values on their financial reporting standards. To ensure the standards are in line with sharia, its main references should be Qur'an and authentic sunnah with additions of *ijtihād* (derived rule), *ijma*' (consensus), and *qiyas* (deductive analogy). These legal frameworks should be included when measuring sharia obedience of IFIs such as in reporting their activities.

The objectives of Shariah are principally known as *Maqāsid ul-Shari'āh* pronounced by Al-Ghazali (1058-1111). The discussion on *Maqāsid ul-Shari'āh* was started when scholars like Al-Ghazali, Ibn al-Hajib and al-Shatibi defined primary needs (*dharūriyyah*) as the preservation and safeguarding of five principles such as protection of religion (*dīn)*, protection of life (*nafs*), protection of intellect ('*aql*), protection of wealth (*māl*), and protection of lineage (*ansab*) (Chapra, 2008; Abdullah & Furqani, 2012). These basic principles are important in every human life or institutions to ensure long term sustainability and prosperity of the economic development and welfare of the people. As belief in the hereafter under Islamic teaching is essential, therefore fulfilling human basic needs that covers the protection of these five principles is also for the purpose of preparing the day of judgment that would be held in the hereafter. This is as noted by Al-Ghazali: "preventing the loss of these five fundamentals (*usul*) and protecting them can never be neglected in any religious community (*millah*) or legal system (Sharia) that is meant for the good and well-being (*shalāh*) of human beings'. This concept would be a consideration of a *mashlahah* that we know by necessity was intended by the Shariah, not on the basis of one single proof or one particular rule, but on multiple proofs that are beyond enumeration. There is a red line when discussing the role of IFIs with SDGs, Zero Waste Accounting and Maqāsid al-Shari'ah and it has become paramount how accounting could serve as accountability platform to the stakeholders.

Result and Discussion

On 15 September 2015, Millenium Development Goals (MDGs) were replaced by Sustainable Development Goals (SDGs) as a new set of development target adopted by the member countries of United Nation. It contains 17 aspects focusing on five keys elements: People, planet, peace, prosperity, and partnership. 17 aspects SDGs are: (1) No Poverty; (2) Zero Hunger; (3) Good Health and Well-Being; (4) Quality Education; (5). Gender Equality; (6). Clean Water and Sanitation; (7) Affordable and Clean Energy; (8) Productive Employment and Economic Growth; (9) Industry, Innovation, and Infrastructure; (10) Reduced Inequalities; (11) Sustainable Cities and Communities; (12) Responsible Consumption and Production; (13) Climate Action; (14) Life Below Water; (15) Life on Land; (16) Peace, Justice and Strong Institution; (17) Partnership for Global Development. It is guidance for global action over the next 15 years (WDI, 2016).

Given this approach, every country must overcome poverty and hunger and ensure that everyone can have a healthy environment. In addition to ensuring everyone is free from fear and violence through strong global cooperation. This agenda will end in 2030. In Islam, SDGs as a whole have been thoroughly discussed. First, No Poverty; Have you seen the one who denies the Recompense? "(1) For that is the one who drives away the orphan (2) And does not encourage the feeding of the poor (3)" (QS Al-Maun: 1-3). Second, Zero Hunger; "And We will surely test you with something of fear and hunger and a loss of wealth and

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ives and fruits, but give good tidings to the patient "(QS Al-Baqarah: 155). Third, Good Health and Well-Being; The Prophet said, "There are two blessings which many people lose: (They are) Health and free time for doing well" (HR. Bukhari No. 6412). Fourth, Quality Education; "…Allah will raise those who have believed among you and those who were given knowledge, by degrees. And Allah is acquainted with what you do" (QS Al-Mujadilah: 11). Fifth, Gender Equality; "O mankind, indeed We have created you from male and female and made you peoples and tribes that you may know one another. Indeed, the most noble of you in the sight of Allah is the most righteous of you. Indeed, Allah is Knowing and Acquainted" (QS. Al-Hujurat: 13). However, this point may differ between UN definitions on Gender Equality with that of Islam's definition, as equality does not mean everyone has the same share (this debate is not discussed as it is beyond the scope of this paper).

Sixth, Clean Water and Sanitation; "… and made from water every living thing? Then will they not believe?" (QS. Al-Anbiya: 30). Seventh, Affordable and Clean Energy; "And have you seen the water that you drink?" (QS. Al-Waqi'ah: 68). Eight, Productive Employment and Economic Growth; The Prophet said, "Nobody has ever eaten a better meal than that which one has earned by working with one's own hands. The Prophet of Allah, David used to eat from the earnings of his manual labor" (HR Bukhari No. 2072). Ninth, Industry, Innovation, and Infrastructure; "Indeed, in the creation of the heavens and the earth and the alternation of the night and the day are signs for those of understanding" (QS. Ali 'Imran: 190). Tenth, Reduced Inequalities; "… so that it will not be a perpetual distribution among the rich from among you.…" (QS. Al-Hashr: 7). Eleventh, Sustainable Cities and Communities; "… Indeed, Allah will not change the condition of a people until they change what is in themselves.…" (QS. Ar-Ra'd: 11). Twelveth, Responsible Consumption and Production; "O children of Adam, take your adornment at every masjid, and eat and drink, but be not excessive. Indeed, He likes not those who commit excess" (QS. Al-A'raf: 31). Thirteenth, Climate Action; "But if the Truth had followed their inclinations, the heavens and the earth and whoever is in them would have been ruined. Rather, We have brought them their message, but they, from their message, are turning away" (QS. Al-Mu'minun: 71).

Fourteenth Life Below Water; "And it is He who subjected the sea for you to eat from it tender meat and to extract from it ornaments which you wear. And you see the ships plowing through it, and [He subjected it] that you may seek of His bounty; and perhaps you will be grateful" (QS. An-Nahl: 14). Fifthteenth, Life on Land; "It is He who enables you to travel on land and sea until, when you are in ships and they sail with them by a good wind and they rejoice therein, there comes a storm wind and the waves come upon them from everywhere and they assume that they are surrounded, supplicating Allah, sincere to Him in religion, "If You should save us from this, we will surely be among the thankful" (QS. Yunus: 22). Sixteenth Peace, Justice and Strong Institution; "O you who have believed, be persistently standing firm for Allah, witnesses in justice, and do not let the hatred of a people prevent you from being just. Be just; that is nearer to righteousness. And fear Allah; indeed, Allah is Acquainted with what you do" (QS. Al Maidah: 8). Seventeenth Partnership for Global Development; "… And cooperate in righteousness and piety, but do not cooperate in sin and aggression. And fear Allah; indeed, Allah is severe in penalty" (QS. Al Maidah: 2).

There are several goals that are directly related to the Islamic finance field such as Poverty, Hunger, Health, Quality education, and Gender equality, Infrastructure, Consumption and Production. First, Islamic finance as tools for alleviate poverty and hunger. Poverty and hunger serve as two vital points in SDGs which have been the main global issues for long time a go. Many research papers present the best solution to solve it, but the problem still remains. One of the most considerable poverty eradication programme is through Islamic social finance instruments such as zakat, infaq, shadaqah, and waqf as tool of wealth equality among the rich and the poor and make sure the needy can afford the food for their daily life. Further, Islamic commercial finance introduces Islamic microfinance where it provides financing program for the low income society so that they can develop themselves to be better financially. Second, Islamic finance to empowering women. Women involvement in Islamic microfinance has been remarkably seen as potential players to the success of the poverty alleviation program in countries where group based programs operate. Group based programs in the microfinance area have been widely spread such as Grameen Model in Bangladesh that has recruited 7.06 million borrowers where 97 per cent of them are women (Yunus, 2007).

Empowering women in the economy creates social capital, which eventually contributes to the achievement of shared prosperity in the society and increased social cohesion that are critical for economic development and sustainability. Third, Islamic finance for infrastructure has been predominant in Islamic developing countries such as Indonesia, Malaysia, Saudi Arabia and others. In Islamic finance, some instruments and contracts are available in conducting public infrastructure financing that implement sharia-compliant principles as well, such as *Istishna* contract and *sukuk* for infrastructure financing. Fourth, Islamic compliance no only able to be applied in money market such as Islamic banking and finance but also in the real market. Muslims are bound by Islamic ethics and morals in the market place where consumers and producers must not consume or produce unlawful products or activities. Consumers and producers must spend part of their wealth to the less fortunate members in Islamic society and consumers are required to show moderation in their consumption. Yahya bin Umar (213-289 H) with his book 'Ahkam As Suq' argues that *tas'ir* (price determination), *ihtikar* (monopoly rent seeking), dan *siyasah al ighraq* (dumping) are not allowed in Islamic economic practices (Subhan, 2015).

Given the above background, it is very essential that there is a need to compose special accounting presentation to highlight the attention on Zero Waste Accounting by Islamic financial institutions (IFIs). It is due to the motivation that comes from Maqashid ul-Shariah, which is to promote protection of the environment (*hifdzul bi'ah or hifdzul 'alam*) (Mukhlisin et al., 2020). However, there is no so far a specific accounting on this issue. Thus, a research question for this paper is to what extent do Islamic financial institutions need to disclose Zero Waste Accounting in order to support SDGs? The purpose of this paper is therefore to propose a model of Zero Waste Accounting in Islamic Financial Institutions in Indonesia and how it is relevant to the achievement of SDGs.

Several SDGs stated above are also related to Zero Waste issues such as "Good Health and Well-Being", "Affordable and Clean Energy", "Sustainable Cities and Communities,"

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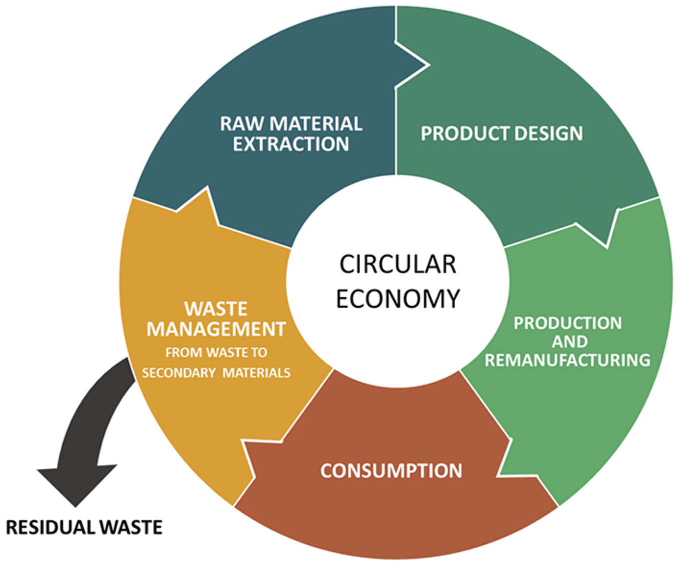
"Climate Action", "Life Below Water and Life on Land." To achieve these SDGs, it is necessary to access financial services for the whole community or financial inclusion (Klapper et al., 2016). Discussing Zero Waste Accounting should be relevant to a term of "circular economy", a restoration industry system, where the economy of utilizing the waste products from the business that has been run (see Figure 2). Basically circular economy is a change in the environment in the face of global needs for economic ecology, and requires human economic activities that are consistent with the three basic principles of reducing, reusing and recycling to actually minimize the waste until the zero waste achieved (Lahti et al, 2018).

Figure 2. The Concept of Circular Economy



Source: Berg et al (2018)

Like the basic principle of a circular economy, the system basically aims to attain the zero waste by designing waste into a new product that can be re-optimized for its benefits. The presence of the circular economy concept is a paradigm for economic development to go beyond the zero waste. Besides that it is also a response to the conventional economic model that is not sustainable using an economic linear system that is "take-make dispose", therefore circular economy replaces the concept with a business model such as "end-of-life ", which can achieve the economic goals of sustainable development and beckon the creation of environmental quality, social equality, and economic prosperity for present and future generations (Berg et al, 2018). Following is the pattern of circular economy with the concept of "end-of-life".

The circular economy concept is not new because academics and previous economic practitioners have discussed it. In the 1970s economists discussed the circular theory of the economy and the result was that this system had a high potential for developing the world economy. Until 2014, Europe became a pioneer in applying the circular economy concept that was implemented in the "Zero Waste for Europe" program, following the development of economic activity in Europe, many European countries had applied the circular economy concept strategy in their business sectors, such as Finland, Netherlands, Scotland, and France. In 2016 Finland became the first country in the world to issue a circular economy road map facilitated by Sitra Studies in collaboration with business sector ministries and stakeholders. Currently throughout the world the circular economy concept has been widely used by governments, entrepreneurs, and academics, although it has not been used consistently. It serves as a toolbox consists of implementation approaches for achieving SDGs (Schroeder et al., 2018).

Agustia et al (2018) argue that companies that create Green Innovation will gain both in terms of economic benefits and competitive advantage, which eventually will increase the value of the firm. It appears to see that there are risks in green accounting's promotion and mobilization that may tarnish the positioning of green accounting practice (Gallhofer & Haslam, 1997). This could be because the green accounting only focuses on forestation and carbon emission. In Zero Waste Accounting, the focus will be more on to the generation of waste into something useful for human life. In other area such as in conservation activity to protect the nature, Barker (2019) proposes that conservation accounting serve informational needs of shareholders and environmentally sustainable business models. From governance perspective, Owen et al (1997) confirms that the ownership concentration ratio influences the quality of the circular economy accounting information disclosure. It means, from the governance side, the ownership can influence disclosure quality of the circular economy. On risk governance, Ng (2018) argues that three listed companies show their heterogeneous approaches to embracing risk governance, sustainable accounting and financing in their issuance of green bonds. Further, she proposes a theoretical framework that reinforces effects of legitimate policy and market-based finance to produce green financing system.

There are many previous studies about zero waste economy but the previous studies about Zero Waste Accounting in achieving SDGs and developing Islamic finance still quite limited. The strongest relationships exist between zero waste practices and the targets of SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land) and CE practices can be applied as a "toolbox" and specific implementation approaches for achieving a sizeable number of SDG targets. This study in line with Muller (2018) that Circular Economy can help in achieving SDG targets and Circular economy should be regarded as a means, not an end of SDG 2 (Zero Hunger), SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation, and Infrastructure) SDG 11 (Sustainable Cities and Community), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land).

To date, Pernyataan Standar Akuntansi Keuangan Syariah/Shariah Financial Reporting Standards (PSAK) Sharia adopted by IFIs only highlights social reporting in form of zakat, infaq, waqf and other social fund. PSAK 101 shows format on how to report the activities, such as Statement of Sources and Uses of Zakat, Sources and Uses of Qardhul Hasan. As for waqaf report, it is a merely collection that is disbursed to Waqf Nadzir, usually institutions that manage productivity of the waqf assets. Nevertheless, PSAK 109

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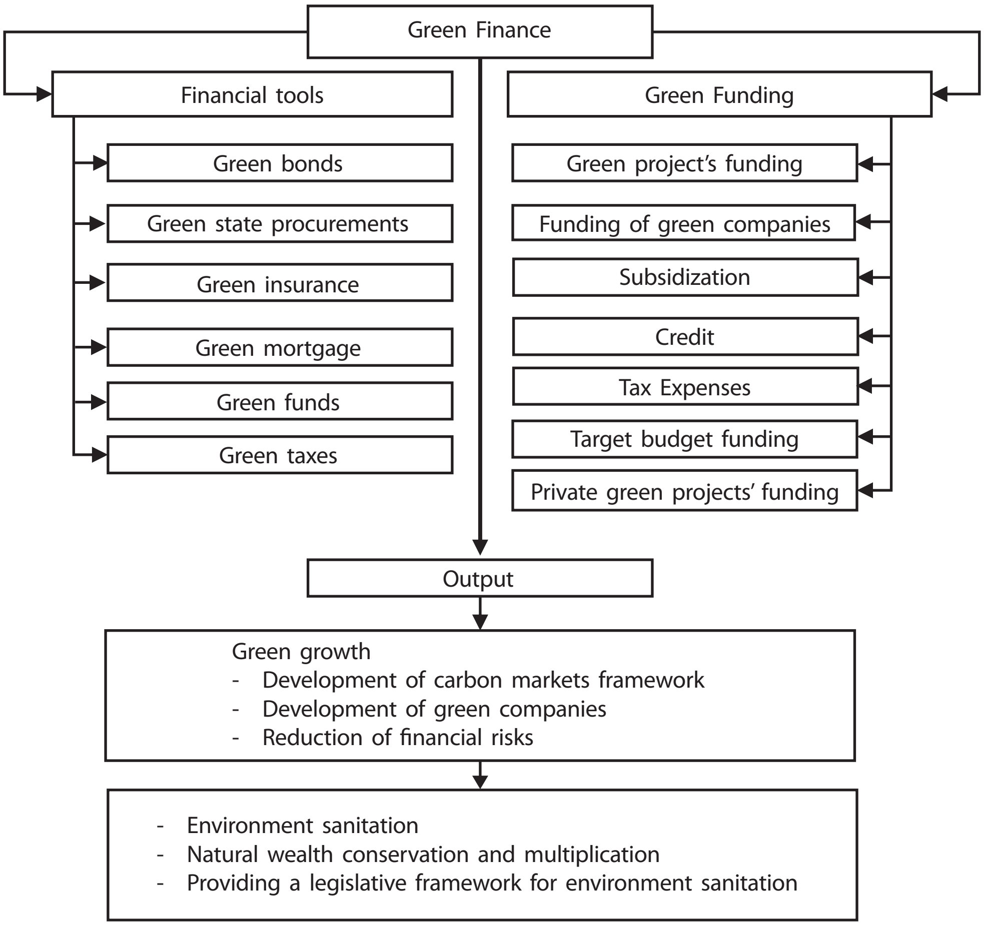
is separate standard for Zakat Institutions and PSAK 112 is standard for waqf reporting prepared by the Nadzir.

Although IFIs have not prepared any specific report regarding Zero Waste Accounting besides the sustainability reporting described above, there are several benchmarks from the conventional counter parts. Andreeva et al. (2018) argue that financial institutions could support green economy development by following responsible funding or targeted economic projects' investing principles through Green investment: Bonds, Insurance, Mortgage, Funds, and Taxes.

Figure 3. Green Project Framework



Source: Andreeva et. al (2018)

Andreeva et al (2018) highlight green projects both from revenue and cost streams (see Figure 3). However they do not show standard on reporting the activities. Barker (2019) elaborates RSPB's approach to natural capital accounting comprises in five steps; set up a straighforward approach, compose asset register, allocate maintenance and remediation cost, establish physical ecosystem, and manage service flows. After that, the institutions need to prepare a natural capital balance sheet such in Table 3.

Table 3. Nature Capital Balance Sheet

2016/7 (PV m)	Private value	External value	Total value
Assets			
Baseline value (00/01)	(73)	681	608
Cumulative gains/losses	-	170	170
Additions/disposals	21	26	47
Revaluations and adjustments	93	155	248
Gross asset value	41	1,031	1,072
Liabilities			
Legal maintenance obligations	-		
Other maintenance provisions	(448)	(80)	(528)
Total net maintenance provisions	(448)	(80)	(528)
Total net Natural Capital Assets	(407)	951	544

Source: Barker (2019)

Barker (2019) goes further by displaying accounting and reporting standards where IFRS is adopted. The accounting and reporting standards show in Table 4.

Table 4. Accounting and Reporting Standards

		Reporting domain		
		Annual report		Supplementary report
		Financial accounts ('back half')	Management commentary ('front half')	
Primary audience	Shareholder	IFRS (listed companies) FRS 102 (private companies)	Companies Act 2006 <IR> SASB TCFD	CDP
	Stakeholder			GRI
	Management			A4S
				Natural Capital Coalition

Source: Barker (2019)

In a similar perspetive, Fleischman & Schuele (2006) assert that since the late 1980s, more regulating bodies in many countries have issued new rules of disclosing environmental reporting in the annual report. They should present and disclose separate reporting on items such as expenditures for pollution prevention, clean up, and fines; actual and contingent liabilities for environmental clean, as presented in Table 5.

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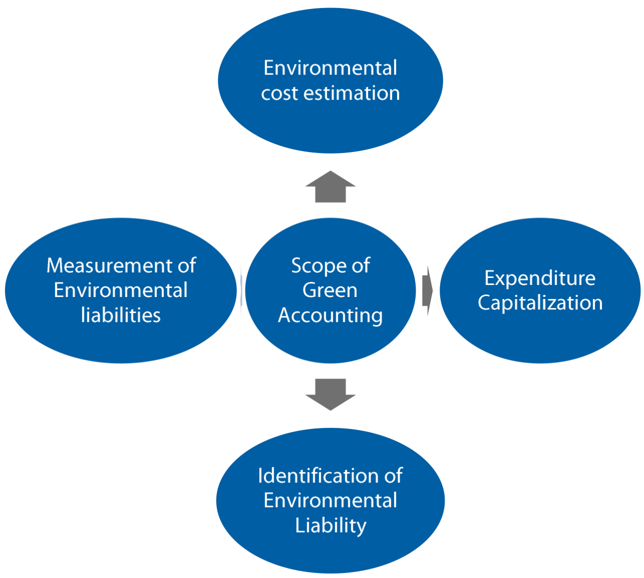
Table 5. Environmental Reporting

Type of report	GFT 250	Top 100*
HSE reports	73%	65%
Sustainability reports	14	12
Environmental and social reports	10	11
Social reports	3	12

Source. KPMG (2002), *Top 100 companies from 19 countries, Source: Fleischman and Schuele (2006)

Minimol & Makesh (2010) report green reporting among the Indian companies and they explain the scope of reporting in Figure 4. Further, Minimol & Makesh argue that the scopes of green accounting are: First, environmental Cost Estimation. Expenses like production cost, research and development expenditures are taken into account in effort of protecting the environment. It can be classified into six environment related capital outflow. Second, the capitalization of expenditure. Company should capitalize the expenditure if its extends the life cycle of the environment, create efficiency, improve the safety of assets that possessed by the company at the time of acquisition, decrease the risk of environmental pollution and also the costs are bared in relation to the sale of asset of a business entity. Third, identification of environmental liability. Company should have contingency fund to do deforestation or other procedure to bring back the function of the natural condition that has been explored optimally. It is needed to compensate the third party who suffers loss from the company activity. Fourth, measurement of environmental liability. The measurement of environmental cost might be computable or even incomputable. If it is calculate-able, company can put the estimated cost in their financial position. Yet, if it cannot be calculated, provide a foot note to explain it at the notes of financial statement.

Figure 4. Scope of Green Reporting



Source: Minimol & Makesh (2010)

Based on that scope of green accounting reporting, Minimol & Makesh (2010) find that most of Indian Companies have the initiatives to promote the green accounting. However, they do not have any reserve or cost capitalizing regarding the environmental issue. Additionally, they do not have any expenditure on environmental asset (effort to raise the property value) as well as the environmental liabilities to pay their future obligations.

From the above benchmarks, we can now draw a statement for Zero Waste Accounting for IFIs to complement PSAK Sharia that has been set by The Indonesian Institute of Accountants (Ikatan Akuntan Indonesia, IAI). Currently, the following types of reports are obligatory to be issued by all IFIs in Indonesia: (a) Financial Position at the end of the period; (b) Comprehensive Profit and Loss during the period; (c) Statement of Changes in Equity during the period; (d) Statement of Cash Flow during the period; (e) Statement of Source and Uses of Zakat Fund during the period; (f) Statement of Sources and Uses of Qard Fund during the period; (g) Notes to the financial statements, consist of summary of important accounting policies and other policy explanation; (h) Comparative financial position statement in the beginning of the period when a Shariah entity implements a kind of accounting policy in retrospective or prepares a repeating disclosure on financial report, or when the Shariah entity reclassifies posts in its financial reporting

PSAK 101 draws a format on Statement of Source and Uses of Zakat Fund and Statement of Sources and Uses of Qard Fund that shows in Figure 5 and Figure 6.

Figure 5. Statement of Sources and Uses of Zakat Fund

Islamic Bank A
Statement of Source and Uses of Zakat Fund
For the year ended 31st December 202X

Source of Zakat Fund	
Zakat from Internal Bank	
xxx	
Zakat from outside Bank	
xxx	
Total	
xxx	
Uses of Zakat Fund	
The poor	xxx
The needy	xxx
Zakat administrators	xxx
New Muslims	xxx
Slaves and captives	xxx
The debt-ridden	xxx
In the cause of God	xxx
The wayfarer	xxx
Total of Uses of Zakat Fund	

Source : IAI (2017)

The Zakat and Qard Fund reporting show the uniqeness of the IFIs. If we look deeper into Qard Fund Format, it has a non-halal income. Although in PSAK 101 states that it is income form late payment penalty, Islamic bank also should classify if the income comes from any project that harm the ecosytem and the community. Besides the standards

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of social finance, IFIs should also refer to the 1993 United Nation Protocol on National Environmental Accounting. This is described as the 'System of Integrated Environmental and Economic Accounting'. This protocol also addresses the business entities including IFIs in this case have a policy which is called "satellite account" which basically focus on the interaction of economic activity to the social and environmental issues.

Figure 6. Statement of Sources and Uses of Qard Fund

Islamic Bank A

Statement of Sources and Uses of *Qard* Fund

For the year ended 31st December 202X

Source of Qard Fund		
Infaq from Islamic Bank		xxx
Shodaqoh		xxx
Waqf Profit		xxx
Non halal income (including late payment penalty)		xxx
Total		**xxx**
Uses of Qard Fund		
Productive Qard Fund	xxx	
Donations	xxx	
Public Purposes	xxx	
Total		**(xxx)**
Increase/Decrease in Qard Fund		xxx
Beginning Balance		xxx
Ending Balance		xxx

Source: IAI (2017)

The distinct characteristic of this account is poking all income as well as expenses which has conjunction to the third "P" of triple bottom line "Planet". Bell and Lehman (1999) draw an example of the satellite account as follow: (a) Account for Environment Protection which encompass the effort of preventing the effect of business especially the operational aspects to natural resources including the capital expenditure to prevent such harm that might be resulted from manufacturing process; (b) Use and Management of Natural Resource Account related to the activity that related to natural resource management such as timber, forest, water, and subsoil asset; (c) Repercussion of Natural Damage, which related to the cost that occurred to refurbish damage that has been happened especially after the exploration of a land; (d) Related Eco Activities which defines as the capital expenditures on the research and development toward better product with eco-friendly technology which can sustain the company longer; (e) Environmental Balance Sheet is a subset of account related the expenses, the revenues the depreciations of eco-assets as well as the liabilities that arise subsequently after the environmental explorations.

The above principles somehow might not be experienced by IFIs since they are a mere of intermediation entities that connect the surplus unit and the deficit unit. However, considering that IFIs have the feature of financing intermediation that allows them acting as investor or the owner of specific asset, IFIs need to think of Zero Waste Accounting for this purpose. There are Islamic contracts that position IFIs acting as investors in the equity participations contract like *Murabahah* (sale and buy), *Mudharabah*, and *Musyarakah* (equity financing), *Ijarah* (leasing). Such equity participations for instance, certainly require Zero Waste Accounting that report the activities of the following: a. Investment in plantation business; b. Investment in oil gas business; c. Investment in coal mining business; d. Investment heavy industry; e. Investment in Recycling Machines Investment; f. Investment in Bio-gradable Machine.

Other Islamic contract that may motivate IFIs to do Zero Waste Accounting is Ijarah contract. The Ijarah contract requires IFIs as the owner of the asset to manage its resources and lease it to the lessee. The Zero Waste Accounting is a must when IFIs possess assets such as: a. Coal Mine; b. Machinery with high pollutions, c. Green project related asset; d. River Filter Machine. As far as zero waste is concerned, all types of contracts above are relevant to be reported in the following format that shows in Table 6.

Table 6. Future Zero Waste Financial Position Proposal

Cost for Zero Waste Management	Type of Contract	Amount
SDG No. 6		
Clean Water and Sanitation		
1. River Filter Machine	Ijarah	xxx
2. Zakat fund to clean river	Social	xxx
SDG No. 12		
Responsible Consumption and Production		
1. 1. Production of Recycling Machines	Mudharabah	xxx
2. 2. Production of Bio-gradable Machine	Musyarakah	xxx
SDG No. 14		
Life Below Water		
1. Sea cleaning project	Qard Fund	xxx
2. Production of Bio-gradable	Mudharabah	xxx
SDG No. 15		
Life on Land		
1. Segregation of Waste Machine	Istisna	xxx
2. Separation Machine	Murabahah	xxx

Source: Authors

Conclusion

The main purpose of this paper is to propose a model of zero waste accounting in Islamic Financial Institutions in Indonesia and how it is relevant to the achievement of SDGs. As this paper adopts interpretative approach which is essential to validate the research with "convincingness" method, the result is presented in the form of a disclosure model. The model is motivated with *Maqāsid al-Shari'ah* spirit that covers the need of the enterprises to disclose their activities that are related to zero waste. The limitation of this paper is on the methodology that only relies on the secondary data. As a recommendation for future research, it is commendable if this research is further enhanced through interview to test if the disclosure format is appropriate. The interview should be conducted with accounting standard setters, scholars who are expert in Islamic finance and authorities in charge on regulating IFIs in

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Indonesia. Should this research cover international coverage, the interviewees would be from international representations.

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Financing	46.886	68.181	102.655	147.505	179.284	187.886
Asset	66.090	97.519	145.467	195.018	229.557	244.197

Source: Islamic banking statistics, Bank of Indonesia

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