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Can Firm Size as a Moderating Variable Enhance Profitability in Islamic Banks in Indonesia?

Sulistyandari*, Alum Kusumah, Khusnul Fikri and Bakaruddin
Faculty of Economics and Business, Universitas Muhammadiyah Riau

Abstract. *This study aims to assess the impact of Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), and Operational Expenses to Operational Income (BOPO) variables on the profitability of Islamic commercial banks, considering firm size as a moderating variable. A quantitative methodology is used in this research, where secondary data are collected from the annual financial statements of Islamic commercial banks from 2018 to 2021. The structural equation modeling (SEM) method was used to conduct data analysis. The research findings indicate that CAR has a significant positive effect on profitability, whereas NPF and BOPO have no significant effect. However, firm size was found to significantly moderate the effects of CAR and BOPO on profitability. The implications of this study highlight the importance of considering firm size in planning the policies and operational strategies of Islamic commercial banks to strengthen the relationship between these factors and the desired level of profitability. This study provides new insights into understanding the factors that influence the profitability of Islamic commercial banks and makes a significant contribution to the literature on Islamic banking.*

Keywords: *Islamic bank, profitability, capital adequacy ratio, non-performing financing, operational expenses, operational revenue*

Abstrak. *Penelitian ini bertujuan untuk mengevaluasi dampak variabel CAR, NPF, dan BOPO terhadap profitabilitas bank umum syariah, dengan mempertimbangkan ukuran perusahaan sebagai variabel moderasi. Penelitian ini menggunakan metodologi kuantitatif dimana data sekunder dikumpulkan dari laporan keuangan tahunan bank umum syariah yang mencakup periode 2018 hingga 2021. Metode Structural Equation Modeling (SEM) digunakan untuk melakukan analisis data. Temuan penelitian menunjukkan bahwa dalam hal profitabilitas, CAR menunjukkan dampak positif yang signifikan, sedangkan NPF dan BOPO tidak menunjukkan pengaruh yang signifikan. Namun, ukuran perusahaan terbukti memoderasi pengaruh CAR dan BOPO terhadap profitabilitas secara signifikan. Implikasi dari penelitian ini menyoroti pentingnya mempertimbangkan ukuran perusahaan dalam perencanaan kebijakan dan strategi operasional bank umum syariah untuk memperkuat hubungan antara faktor-faktor tersebut dan tingkat profitabilitas yang diinginkan. Penelitian ini memberikan wawasan baru dalam memahami faktor-faktor yang mempengaruhi profitabilitas bank umum syariah dan memberikan kontribusi yang signifikan terhadap literatur perbankan syariah.*

Kata Kunci: *Bank syariah, profitabilitas, rasio kecukupan modal, pembiayaan bermasalah, beban operasional, pendapatan operasional.*

*Corresponding author. Email:sulistyandari@umri.ac.id
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Introduction

The year 2021 still marks the period of national economic recovery following the COVID-19 pandemic. The government's efforts to control the situation, particularly through mass vaccination programs, have had a positive impact on national economic growth. It is evidenced by the increased engagement in social endeavors within the community, which subsequently facilitated the revival of the actual economic sphere. In this context, it is worth mentioning that the Islamic financial services sector has also experienced significant expansion, as evidenced by the asset growth of a commendable 13.82% (year-on-year) to a remarkable Rp 2,050.44 trillion compared to the previous year's recorded figure of Rp 1,801.40 trillion. Asset growth of 13.94% (YoY) was recorded by the Islamic banking sector, which includes Islamic Commercial Banks, Islamic Business Units, and Islamic People's Financing Banks.

This growth outperforms traditional banking, which experienced a 9.86% increase according to the OJK report published in 2021. An essential element within the Islamic banking sector undoubtedly involves the presence and functioning of an Islamic Commercial Bank (ICB). This bank has presented favorable results, demonstrating efficient intermediation. Financing provided and third-party funds have experienced growth of 6.90% (YoY) and 15.30% (YoY), respectively. The increasingly solid resilience and positive performance will undoubtedly impact the profits generated by this bank. To measure the bank's ability to generate profits, profitability ratios are used. Profitability is an important indicator for assessing a firm's performance and indicating the firm's effectiveness in managing its resources (Maryanti, 2020). High profitability indicates that the firm has effectively utilized its assets (Anggraeni & Berniz, 2022). Table 1 shows the key performance indicators of the bank, specifically the Islamic Commercial Bank.

Table 1.
Primary Performance Indicators of Islamic Commercial Banks

Indicators	2018	2019	2020	2021
Total assets (IDR billion)	316,691	350,364	397,073	441,789
Asset Growth (%)	-	10.65	13.35	11.27
Return on Assets (ROA) (%)	1.28	1.73	1.40	1.55
Non -Performing Financing (NPF) (%)	3.26	3.23	3.13	2.59
Operating Expense to Operating Income (BOPO) (%)	89.18	84.45	85.55	84.33

Source: OJK (2022

Descriptive Statistics of the Key Variables

Table 1 presents key performance indicators of Islamic commercial banks from the years 2018 to 2021, including asset growth. Total Assets represent the aggregate value of assets held by the banks in Indonesian Rupiah (IDR) billion. Assets growth represents the percentage change in assets from the previous year. Return on Assets (ROA) is a profitability ratio, calculated as the net income divided by average total assets, expressed as a percentage.

Non-performing financing (NPF) is the percentage of financing categorized as non-performing or in default. Operating Expense to Operating Income (BOPO) is the ratio of operating expenses to operating income, indicating the efficiency of the bank in managing its operational costs.

Primary performance indicators of Islamic Commercial Banks from 2018 to 2021. The data provide an interesting overview of the development and performance of the bank during that period. The total assets of the bank increased from IDR 316.691 billion in 2018 to IDR 441.789 billion in 2021. This indicates significant growth in the bank's asset size over the past four years, reflecting expansion and the bank's success in gathering funds and providing financing.

The bank's ROA encountered notable fluctuations within the specified period. ROA is a crucial ratio for evaluating the effectiveness of a bank's asset management in generating profits. Based on the data given, it observes that ROA exhibited a fluctuating pattern over the years. In 2018, the ROA stood at 1.28%, which then experienced an increase to 1.73% in 2019. However, it subsequently declined to 1.40% in 2020, only to rebound once more and reach a value of 1.55% in 2021. The variations in value over time illustrate alterations in the banking institution's effectiveness in effectively managing its financial resources and attaining the intended degree of profitability. Moreover, the Non-Performing Financing (NPF) or non-performing financing ratio exhibits a noteworthy pattern. The NPF ratio exhibited a decline, plummeting from 3.26% in the year of 2018 to a more favorable figure of 2.59% as of the year 2021. This suggests an advancement in the bank's creditworthiness, as the volume of non-performing financing declined during the specified time.

This study analyzed the fluctuations within the Bank's Operating Expense to Operating Income (BOPO) ratio. The ratio serves as a measure for assessing the level of operational efficiency within the bank, whereby a decreased BOPO ratio signifies enhanced effectiveness in managing the bank's operational expenditures. The BOPO ratio of the bank, derived from the data given, exhibits a consistent pattern with minor variations spanning from 2018 to 2021; the lowest value occurred in 2019 at 84.45%, while the highest figure was recorded in 2020 at 85.55%.

The bank's Capital Adequacy Ratio (CAR) has experienced alterations. The level of capital adequacy of the bank, which measures its ability to withstand potential risks, is assessed by CAR. Based on the provided data, it is evident that the bank's Capital Adequacy Ratio (CAR) witnessed a noteworthy surge, escalating from 20.39% in 2018 to an impressive 25.71% in 2021. The observed surge in figures suggests that the financial institution has bolstered its capital adequacy, thus amplifying its ability to absorb risks and uphold overall financial stability. In sum, the tabulated information in Table 1 offers a compelling depiction of the evolution of the Islamic Commercial Bank's performance spanning the years 2018 to 2021. The alterations in the bank's assets, ROA, NPF, BOPO, and CAR collectively suggest a progressive evolution.

The examination of factors influencing bank profitability has been the subject of numerous studies and scientific research endeavors. Various intriguing discoveries have surfaced within the realm of banking. A noteworthy discovery lies in the discernible contrast regarding the influence of capital on profitability when comparing banks located in low-income countries with those situated in high-income countries. Banks located in low-income countries exhibit a greater size of capital's influence on profitability, in contrast to their counterparts stationed in high-income countries, as discovered by Lee and Hsieh (2013) through meticulous analysis. Various economic and business environment factors can influence the correlation existing between capital and bank profitability.

Moreover, the existing research presents divergent results in terms of the influence of NPF on ROA. The investigation conducted by Riyadi and Yulianto (2014) revealed that NPF lacks a considerable impact on ROA, primarily because of the incongruity observed in the association between financing activities and ROA.

Nevertheless, Almunawwaroh and Marliana (2018), who unveiled that NPF and CAR exert a noteworthy detrimental impact on ROA, observed contrasting results. This observation suggests that variables such as credit quality and capital adequacy possess the potential to influence the size of a bank's profitability. Furthermore, Nuha and Mulazid (2018) and Riyadi and Yulianto (2014) conducted research that concluded NPF does not affect ROA, but BOPO does exert influence over ROA. This implies that the financial gain of banks can also be influenced by various operational cost elements.

The empirical findings by Pandapotan and Lastiningsih (2020) led to the conclusion that bank size exhibits a noteworthy adverse effect on profitability. As a bank's size increases, its potential for profitability decreases. In the banking context, these studies contribute valuable insights for comprehending the factors influencing bank profitability. The various impacts of capital, NPF, BOPO, and bank size can provide disparate viewpoints on the profitability of banks.

Islamic banks possess distinct characteristics compared to conventional banks because of compliance with Islamic law principles derived from the Quran and Hadith. They are prohibited from non-shariah compliant activities and are overseen by a Shariah Supervisory Board to ensure alignment with Islamic principles.

These unique attributes can influence Islamic banks' profitability drivers and performance outcomes compared with conventional banks. For example, adherence to profit-and-loss sharing financing arrangements rather than interest-based lending may influence funding costs, credit risk, and capital adequacy (Mohammed, Ali, & Sadique, 2015). Compliance with Zakat obligations and the prohibition of speculative trading also have implications.

Therefore, it is crucial to examine profitability determinants specifically for Islamic banks instead of generalizing conventional banking findings. This enables appropriate understanding and guidance for Islamic institutions to support their financial sustainability in the growing global Islamic finance industry. Analyzing influential factors such as CAR, NPF, and BOPO, and how they interact with Islamic banks' profitability in Indonesia will provide insights to improve policies, governance, and competitive positioning.

Furthermore, the examination of factors influencing the profitability of Islamic commercial banks in this study is of significant urgency. In the dynamic landscape of Islamic banking, a comprehensive comprehension of these variables is indispensable to optimize the efficacy and durability of Islamic financial institutions. The outcomes of this investigation can offer significant understanding for the Islamic -banking sector in developing more efficient regulations and operative approaches. Furthermore, the identification of firm size as a moderator for the effects of these factors on profitability presents valuable insights for banking institutions seeking to effectively navigate and address both internal and external variables.

Literature Review and Hypotheses Development

Islamic Bank

An Islamic bank is a banking institution that operates following the principles of Shariah or Islamic law, as regulated by Law No. 21 of 2008 on Islamic Banking in Indonesia (Bank Indonesia, 2008). These Shariah principles refer to principles derived from the Quran and Hadith as sources of Islamic law. Islamic banks prohibit engaging in activities that contradict Shariah principles, including direct stock trading in the capital market and conducting conventional insurance business, except as agents for marketing Shariah-compliant insurance products (Bank Indonesia, 2008).

The objective of Islamic banks is to provide financial facilities by developing financial instruments that comply with Shariah provisions and norms. To ensure compliance with Shariah principles, Islamic banks establish a Shariah Supervisory Board (DPS) overseen by the Indonesian Ulama Council (MUI). The DPS plays a vital role in overseeing and ensuring that the activities of Islamic banks align with applicable Shariah principles (Bank Indonesia, 2005).

Financial Ratio Analysis

Financial ratios are derived by comparing important and pertinent elements within financial statements. In the realm of financial reporting, this juxtaposition can be established either between one element and another or amidst constituents encapsulated within the corpus of financial statements. Hery (2018) posited that financial ratios emerge by juxtaposing a specific entry in financial statements with another entry that maintains a contextual connection. In the interim, as indicated by Kasmir (2018), financial ratios comprise the process of comparing numerical values within financial statements by utilizing the division operation. This comparison could be conducted either within a solitary financial statement, examining one component against another, or across various financial statements, comparing different components. In addition, it is possible to conduct comparisons between numbers within a singular time and across various distinct periods.

Profitability

Profitability is a ratio that displays an organization's aptitude to generate financial gains by effectively utilizing its entire range of capacities and resources. This ratio incorporates earnings derived from sales operations, efficiency in the use of assets, and effectiveness in capital utilization (Hery, 2018). Profitability is frequently utilized as a foundation for assessing the financial efficacy of a firm given that revenue or profit serves as the fundamental essence of any enterprise. A business cannot sustain itself without generating profit (Pandapotan & Lastiningsih, 2020).

ROA is a frequently employed profitability ratio that gages the level to which equity aids in generating net income. ROA measures the effectiveness with which total equity generates net income from each dollar invested. The greater the return on assets, the more substantial the earnings resulting from firm operations, signifying enhanced overall performance. The formula for Return on Assets (ROA), as stated by Hery in 2018 is ROA = (Net Income / Total Assets) x 100%.

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a ratio used to measure the adequacy of capital held by a bank to support its risk-bearing assets or activities. CAR represents the minimum capital required to ensure the interests of third parties are safeguarded. The formula for CAR is the ratio of capital to risk-weighted assets (RWA), multiplied by 100% (Kasmir, 2016). The higher the CAR value, the healthier the bank's condition, as it indicates a greater resilience of the bank in facing the potential decline in asset value due to troubled assets (Almunawarroh & Marliana, 2018). According to Bank Indonesia Regulation No. 9/13/PBI/2007, the minimum desirable CAR is 8%. If a firm's CAR falls below 8%, it is categorized as unhealthy.

Non-Performing Financing (NPF)

Non-performing financing (NPF) is one of the performance assessment indicators used by Islamic banks to measure the quality of productive assets, particularly problematic financing. Problematic financing refers to financing that has doubtful, non-performing, or defaulted qualities. The NPF is a ratio used to determine the proportion of problematic financing based on the likelihood that the debtor will not meet their obligations to the bank at the maturity date (Almunawwaroh & Marliana, 2018). The NPF has a significant impact on the profitability of Islamic banks. When NPF is low, it is expected that income will increase, resulting in higher profitability (Riyadi & Yulianto, 2014). According to Bank Indonesia Regulation No. 23/2/PBI/2021, the maximum threshold for NPF considered good is 5%. The formula for NPF is NPF = (Total Problematic Financing / Total Disbursed Financing) x 100%.

Operational Expenses to Operational Income (BOPO)

The Operational Expenses to Operational Income (BOPO) ratio serves as an indicator for assessing a firm's efficiency by juxtaposing the entirety of its operational expenses against its overall operational income. BOPO, a denominator comprising operational income, is employed to assess the correlation between operating expenses and operational income within a defined period (Harmono, 2018). Following the guidelines set forth by Bank Indonesia, an exemplary BOPO ratio should ideally be maintained below 90%. If the BOPO surpasses 90% and nears 100%, the firm is inept in its operational procedures. The calculation of BOPO is BOPO = (Operational Expenses / Operational Income) x 100%.

Firm Size

Firm Size is employed as an approach to evaluate or ascertain the extent of a firm, frequently denoted by its asset holdings. The potential for income generation increases proportionally with the increase in assets, as these assets are employed for profit-generating operational activities (Pandapotan & Lastiningsih, 2020). As stated by Riyanto in his 2012 study, the measurement of firm size accomplished by examining the size of equity, sales, or assets. Large-scale companies hold a distinct advantage when it comes to acquiring funding from multiple sources, given that creditors and investors typically demonstrate a higher interest in these larger entities due to the perceived potential for generating greater profits compared with smaller enterprises. The assessment of a firm's size can be determined utilizing the formula, Firm Size = Natural Logarithm (Total Assets).

Hypotheses Development

Relationship between CAR and ROA

Strong capital is necessary to establish such organizations. Capital is an essential factor for business development and serves as a guarantee to minimize the risk of losses. The size of a bank's capital affects its ability to conduct its operational activities, thus generating profits for the bank (Almunawwaroh & Marliana, 2018).

CAR represents the capital adequacy ratio, and if the CAR value is high, the bank can finance its operational activities, which contributes significantly to profitability. The assumption is that sufficient capital in the form of CAR allows Islamic banks to operate their business activities efficiently. This, in turn, can positively contribute to the bank's profitability, as measured by ROA. Research conducted by Anggraeni & Saurdhika (2014), and Damayanti et al. (2021) indicates that CAR has a significant positive influence on profitability.

H1: CAR has a significant positive influence on ROA.

Relationship between NPF and ROA

In the banking industry, NPF is used as an indicator to identify financing that experiences payment problems or failure risks. The size of non-performing financing can lead to the inability of the disbursed financing to generate the expected income. Additionally, an increase in NPF can result in the formation of larger provisions for non-performing financing, potentially reducing the bank's profits (Almunawwaroh & Marliana, 2018). Studies by Damayanti et al., (2021) and Almunawwaroh & Marliana (2018) have shown a significant negative relationship between NPF and ROA. This implies that banks with a higher proportion of non-performing financing tend to have lower profitability.

H2: NPF has a significant negative influence on ROA.

Relationship between BOPO and ROA

BOPO is a ratio used to measure the efficiency of a bank's management in controlling operational costs relative to operational income. A decreased BOPO value suggests enhanced operational expense management by the bank, thereby mitigating the potential for adverse banking circumstances (Frianto, 2012). Previous investigations, for instance, the research endeavors led by Nanda et al. (2019) and Fadhilah & Suprayogi (2019), have reached a verdict that BOPO exhibits a substantial impact on ROA (Return on Assets). Nevertheless, research conducted by Saputri and Oetomo in 2016 indicated that BOPO exerts a noteworthy detrimental impact on overall profitability.

H3: BOPO has a significant negative influence on ROA.

Relationship between Firm Size and ROA

Total assets owned by the bank indicate firm size. The larger the amount of assets, the higher the generated income tends to be as these assets are used in the firm's operational activities (Fathoni & Syarifudin, 2021). However, research conducted by Pandapotan & Lastiningsih (2020) indicates that firm size has a significant negative impact on profitability. When total assets increase, firm profitability tends to decrease, indicating that the firm's ability to generate income is not maximized. However, several studies, such as those conducted by Budisaptorini et al. (2019), Harisa et al. (2019), and John & Adebayo (2013), show different results, suggesting that firm size has a significant positive impact on profitability.

H4: Firm Size has a significant positive impact on ROA.

Moderating Effect of Firm Size on the Relationship between CAR, NPF, and BOPO toward ROA.

Firm size is additionally a ratio that categorizes the extent of a predicated on its aggregate assets (Mindra & Erawati, 2016). The size of a corporate entity, irrespective of its scale, can wield a significant impact on the financial income it accrues. A firm's size, representing its total assets, plays a pivotal role in the correlation between CAR, NPF, BOPO, and ROA. Firm size, serving as a moderator, might influence both the intensity and orientation of the associations among those factors. Previous studies have established the impact of firm size on the correlation among CAR, NPF, BOPO, and ROA.

Various researchers (Budisaptorini et al., 2019; Harisa et al., 2019; John & Adebayo, 2013) have observed and established a substantial positive correlation between the dimensions of a and its profitability. Conversely, alternative investigations (Pandapotan & Lastiningsih, 2020) concluded that the size of a firm has a significant influence on profitability. Consequently, this research endeavor seeks to investigate the influence of firm size, employed as a moderating variable, on the association among CAR, NPF, BOPO, and ROA.

The study hypotheses are outlined as follows:

H5: Firm Size Moderates the Relationship between CAR and ROA.

H6: Firm Size Moderates the Relationship between NPF and ROA.

H7: Firm Size Moderates the Relationship between BOPO and ROA.

Research Methodology

The methodology utilized in this investigation incorporates a quantitative method, characterized as a research approach that investigates a particular population or sample, conducts data collection through the utilization of research instruments, and applies statistical analysis techniques to assess predetermined hypotheses (Ghozali, 2014). The analysis presented in this research is predicated on the utilization of secondary data procured from the annual financial reports of Islamic Commercial Banks spanning the period from 2018 to 2021. The utilization of the Structural Equation Modeling (SEM) technique is paramount for the employed data analysis. The study's dependent variable is denoted as Return on Assets (ROA), whereas the independent variables encompass Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), and the ratio of Operating Expenses to Operating Income (BOPO). Firm size functions as the moderating variable.

The sample for this research encompasses all Indonesian Islamic commercial banks operating between 2018 and 2021 (Table 2). This period was chosen because it provides recent data on the banks' performance while covering a sufficient duration to assess profitability trends. The years 2018 to 2021 also include the COVID-19 pandemic period, allowing analysis of profitability drivers under economic volatility.

Research Framework

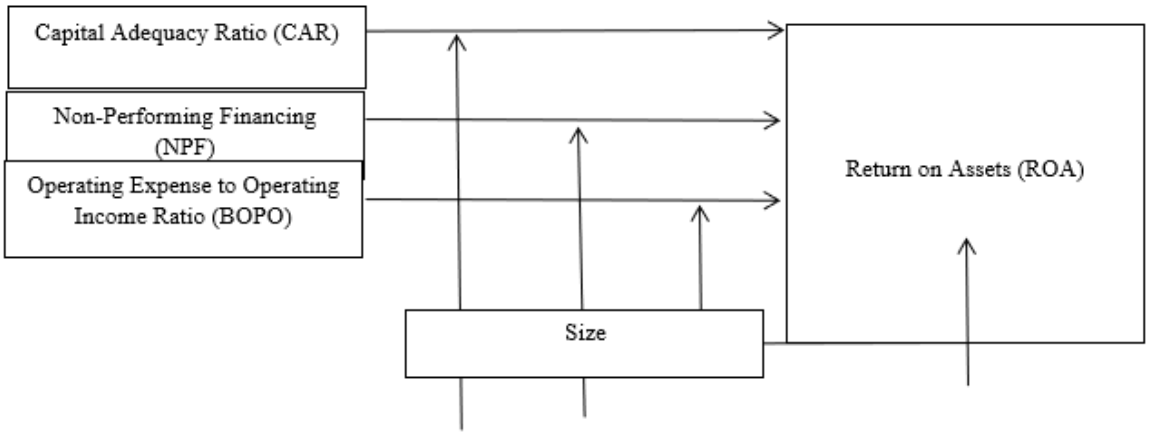

Figure 1.
Research framework

The sample is limited to Islamic commercial banks because of their role as leading institutions offering integrated Islamic financial services in Indonesia. As the focus of this study is on factors affecting profitability specifically in Islamic banking, other institutions such as conventional commercial banks or rural Islamic banks are excluded. Only Islamic commercial banks with comprehensive financial reports from 2018-2021 are included. Complete data across the four years is imperative for quantitative structural equation modeling methodology to allow the assessment of causal relationships between variables over time. Banks with substantial missing data are excluded as this would impede statistical analysis.

The final sample comprises 11 Islamic commercial banks operating in Indonesia with complete financial reports from 2018 to 2021. This sample enables robust quantitative analysis of the determinants influencing profitability using structural equation modeling techniques. The findings can provide generalizable insights for Indonesian Islamic commercial banks while acknowledging limitations in extending the conclusions to other types of financial institutions.

Results and Discussion

Structural Model Testing (Inner Model)

WarpPLS 7.0 was employed to examine the inner or structural model. The fit of the structural model was thoroughly examined through the execution of multiple crucial steps. The initial phase entailed assessing the coefficient of determination (R-squared) to gage the extent to which the independent variables elucidate the fluctuations observed in the dependent variable. Subsequently, the incorporation of model fit testing and quality indices allowed for assessing the degree to which the model aligns with the given data. Moreover, predictive relevance (Q-squared) was evaluated to determine the model's ability to accurately predict the dependent variable. Finally, the research model utilized F-squared effect size measures to ascertain the degree of contribution made by the independent variables toward the dependent variable. By conducting these stages of structural model testing, we gain a profound understanding of the interconnectedness between the variables within the research model, as elucidated by Wold (2014).

Furthermore, Structural equation modeling (SEM) using the partial least squares (PLS) approach was chosen as the analytical technique for this study. SEM-PLS is suitable for analyzing complex causal relationships between multiple independent and dependent variables, including moderation effects, with relatively small sample sizes (Ghozali, 2014). Several prior studies have used SEM-PLS to examine factors influencing bank profitability with moderators (e.g., Hasan et al., 2020; Kirimi et al., 2021). SEM-PLS estimates path coefficients between constructs and the statistical significance of hypothesized relationships better than regression analysis when assessing moderation effects (Hair et al., 2017). While some studies used OLS and GMM models, SEM-PLS is preferred here as it allows comprehensive analysis of the direct effects of CAR, NPF, and BOPO on profitability along with the moderating role of firm size. This technique provides greater explanatory power for the nuanced relationships and hypotheses proposed.

Coefficient of determination (R-squared)

The coefficient of determination, or R-squared, indicates the percentage of variation in the endogenous variable (criterion) that can be explained by the hypothesized influencing constructs (exogenous/predictor variables). The R-squared values for each research variable are influenced by other variables.

The coefficient of determination (R-squared) for the profitability variable is 0.153, indicating that 15.3% of the variation in profitability is explained by the model. While lower than some previous bank profitability studies, this R-squared value is reasonable given the complexity of modeling profitability and is within the typical range for studies using SEM-PLS (e.g., R-squared of 11% in Kirimi et al., 2021; 18% in Hasan et al., 2020). The remaining variance may be explained by factors not included in the model.

Model Fit and Quality Indices

To evaluate the model fit and quality indices, various indicators were used, as shown in Table 4. All the standardized values of the model fit and quality indices meet the required criteria. This indicates that the model in this study has good goodness of fit, and there are no issues of multicollinearity among the indicators and exogenous variables.

Predictive Relevance (Q-Squared)

Q-squared, also known as the Stoner-Geisser coefficients, is a measure used to assess the predictive validity or relevance of a set of latent variables. A good model is indicated when the Q-squared value is greater than zero. The estimation results for Q-squared in this model are found in the output of the latent variable coefficients. Based on the estimation results in Table 5, it can be observed that the Q-squared value is greater than zero, specifically 0.920. Therefore, it can be interpreted that the research model has good predictive validity.

Effect Size (F-Squared Effect Size)

The effect size (effect size coefficient) for each predictor latent variable on the R-squared of the criterion variable is calculated as follows: The effect size was categorized into three criteria: small (0.02), medium (0.15), and large (0.35). Effect size values for your research model in the output of the standard errors and effect size for the path coefficients.

Based on the effect size results in Table 6, the following findings are observed regarding the strength of the effects: Weak effect: The capital adequacy ratio has a weak effect on profitability, with an effect size of 0.133. Medium effect: non-performing financing has a medium effect on profitability, with an effect size of 0.224. Similarly, the effect of operational expenses on operational income (BOPO) on profitability is medium, with an effect size of 0.247. Large effect: bank size has a large effect on profitability, with an effect size of 0.298.

Table 2.
Sample of Islamic Commercial Banks for the Period 2018-2021

No	Bank Name
1	PT. Bank Aceh Syariah
2	PT. BPD Nusa Tenggara Barat Syariah
3	PT. Bank Muamalat Indonesia, Tbk
4	PT. Bank Victoria Syariah
5	PT. Bank Jabar Banten Syariah
6	PT. Bank Mega Syariah
7	PT. Bank Panin Dubai Syariah, Tbk
8	PT. Bank Syariah Bukopin
9	PT. BCA Syariah
10	PT. Bank Tabungan Pensiunan Nasional Syariah
11	PT. Bank Aladin Syariah

Source: OJK (2022)

Table 3.
R-Squared Coefficients

	CAR	NPF	BOPO	Size	ROA
R-squared					0,153

Source: Data analysis was conducted using WarpPLS 7.0 (2023)

Table 4.
Model Fit and Quality Indices

No	*Model Fit* and *Quality Indices*	Criteria	Test Result	Interpretation
1	Average path coefficient (APC)	Accepted if p < 0.05	P=0,027	Accepted
2	Average adjusted R -squared (AARS)	Accepted if p < 0.05	P=0,000	Accepted
3	Tenenhaus GoF (GoF)	Small ≥ 0.1; Medium ≥ 0.25; Large ≥ 0.36	0,36	Large
4	Sympson's paradox ratio (SPR)	Accepted if ≥ 0.7; ideally = 1	0,786	Accepted
5	Statistical suppression ratio (SSR)	Accepted if ≥ 0.7	0,857	Accepted

Source: Processed data from WarpPLS 7.0 (2023)

Table 5.
Q-squared

	CAR	NPF	BOPO	Size	ROA
R-squared					0,920

Source: Data processed using WarpPLS 7.0 (2023)

Table 6.
Effect Size of the Path Coefficients

	CAR	NPF	BOPO	Size
CAR				
NPF				
BOPO				
Size				
ROA	0,133	0,224	0,247	0,298

Source: Data processed using WarpPLS 7.0 (2023)

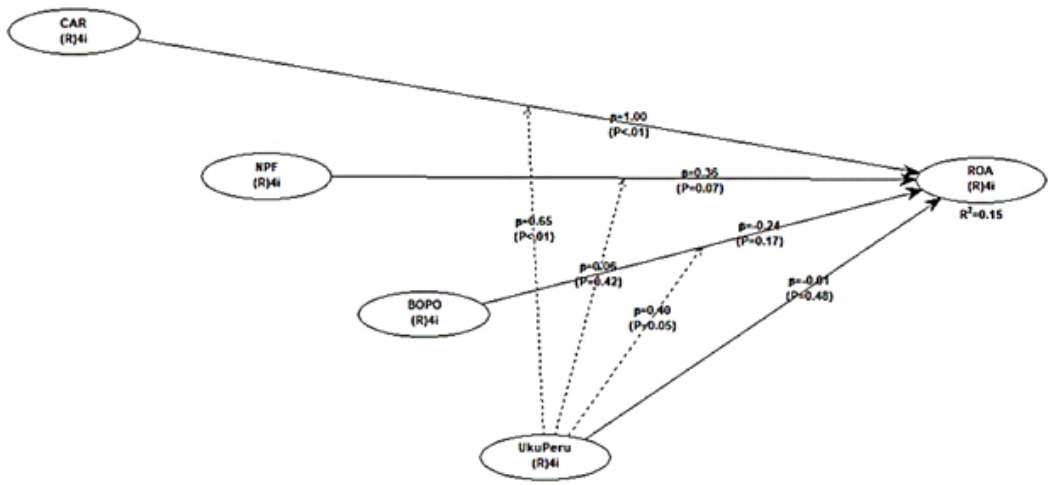

Figure 2.
Evaluating the Research Model using WarpPLS 7.0
Source: Data processed using WarpPLS 7.0 (2023)

Table 7.
Path Coefficient Estimation Results

Hypothesis		Path Coefficient	P-value	Result
1	CAR→ROA	1.00	<0.01	Supported
2	NPF→ROA	0.36	0.07	Not supported
3	BOPO→ROA	-0.24	0.17	Not supported
4	Size→ROA	-0.01	0.48	Not Supported
5	CAR*Size → ROA	0.65	<0.01	Supported
6	NPF*Size → ROA	0.06	0.42	Not supported
7	BOP*Size → ROA	0.40	0.05	Supported

Source: Data processed using WarpPLS 7.0 (2023)

Hypothesis Testing

Hypothesis testing using SEM-PLS will reveal seven hypotheses that are used to assess the significance level (p-value) and relationships between variables in the research model, as shown in the path coefficients. Figure 2 shows the results of the testing using WarpPLS 7.0. All the hypotheses encompassed in this investigation can be ascertained as either noteworthy or not significant contingent on the P-value. If the p-value is less than or equal to 0.05, the null hypothesis (Ho) is rejected in favor of the alternative hypothesis (Ha), suggesting a statistically significant effect. Conversely, should the obtained P-value surpass 5% (≥0.05), the null hypothesis (Ho) would be upheld while the alternative hypothesis (Ha) would be rejected, thereby highlighting an insignificant impact. The computed outcomes of the path coefficients are employed to assess the connections among variables and ascertain the directionality of the associations. The calculated path coefficients are observable within the confines of Table 6. Based on the P-values in Table 7, hypothesis test results 1 to 4 are as follows:

Hypothesis 1: Capital Adequacy Ratio has a positive and significant effect on Profitability.

The effect between (CAR) and Profitability exhibits a significant positive influence. The test results reveal a positive and significant relationship between CAR and ROA, as evident from the path coefficient value of 1.00 and a P-value below 0.01. CAR, or Capital Adequacy Ratio, serves as a critical measure to assess the sufficiency of capital maintained by Islamic banks. The findings of the test indicate that as the level of capital adequacy increases, the amount of profitability generated also tends to increase. This provides evidence that possessing an adequate amount of capital enables banks to efficiently execute their operations, mitigate risks, and enhance their potential for generating profits. This finding aligns with the principles of financial theory, which assert that robust capital is pivotal in attaining favorable financial outcomes within the banking sector.

Hypothesis 2: Non-Performing Financing has a positive but non-significant effect on Profitability.

There is no significant influence between NPF and Profitability. The test results reveal that the association between NPF and ROA is positive, albeit without statistical significance, as denoted by a path coefficient of 0.36 alongside a P-value of 0.07. NPF denotes the issue of problematic financing in Islamic banking institutions. The experiment's outcomes indicate that, even with the existence of non-performing financing, Islamic banks experience no substantial influence on their profitability. This is ascribed to the actions taken by financial institutions to manage and tackle non-performing financing, for instance, the establishment of reserves designated for non-performing financing. This discovery implies that Islamic banks can manage the obstacles presented by non-performing financing while only having a minor impact on their overall profitability.

Hypothesis 3: Operational Costs to Operating Income (BOPO) have a negative but non-significant effect on Profitability.

The analysis reveals that the Operating Expenses to Operating Income Ratio (BOPO) does not exhibit any statistically significant influence on Profitability. The examination outcomes demonstrated that the association between BOPO and ROA exhibited a negative correlation, albeit not deemed statistically significant based on a path coefficient value of -0.24 and a P-value of 0.17. The examination findings indicate that, notwithstanding fluctuations in the financial institution's operational costs, there is an absence of notable consequences on its overall profitability. This is attributed to the bank's implemented management strategies, which encompass measures aimed at effectively overseeing operating expenses and achieving enhanced operational efficiency. Consequently, fluctuations in operating expenses within Islamic banks have a negligible impact on overall profitability.

Hypothesis 4: Firm Size has a negative and non-significant effect on Profitability.

The analysis revealed that no substantial correlation exists between Firm Size and Profitability. The obtained test results demonstrate that a negative, albeit insignificant, correlation exists between the size of the bank and return on assets (ROA), as evidenced by the path coefficient value of -0.01 and a P-value of 0.48. The Islamic bank's size is quantified through the aggregation of its total assets. Empirical evidence from the test results demonstrates that the size of a bank does not possess a statistically meaningful influence on its profitability. While larger banks may have greater assets allocated for operational activities, their profitability is not significantly impacted. This observation indicates that the viability of Islamic financial institutions not being contingent on their scale, but rather shaped by additional elements such as proficient risk management and well-executed business strategies.

Hypothesis 5: Firm Size strengthens (moderates) the relationship between capital adequacy ratio and profitability.

The path coefficient was 0.65, indicating a strong positive interaction effect between CAR and bank size on ROA. The p-value was less than 0.01, suggesting that the interaction effect was statistically significant, supporting the hypothesis. The presence of a larger firm has a notable impact on the connection between Capital Adequacy Ratio (CAR) and Profitability, indicating that Firm Size serves as an influential moderator. This study reveals the significant influence of Firm Size in bolstering the profitability of Islamic banks through its strong moderating role on the impact of CAR. This observation suggests that as the size of a firm increases, the impact of CAR on profitability becomes more pronounced. This finding implies that having a substantial firm size could amplify the favorable impact of sufficient capital on the profitability of Islamic banks.

Hypothesis 6: Firm Size does not strengthen (does not moderate) the relationship between non-performing financing and profitability.

The path coefficient is 0.06, suggesting a positive interaction effect between NPF and bank size on ROA. The p-value is 0.42, which is greater than 0.05. The interaction effect is not statistically significant, and the hypothesis is not supported. The presence or absence of significant influence from Firm Size as a moderator on the relationship between Non-Performing Financing (NPF) and Profitability is not apparent. In the present investigation, the size of a bank does not demonstrate a substantial influence on fortifying or regulating the association between non-performing financing and the financial performance of Islamic banking institutions. This implies that the impact of firm size on the relationship between NPF and the profitability of Islamic banks is not statistically significant. This discovery indicates that additional variables, rather than the size of the bank, exert a more substantial impact on shaping this association.

Hypothesis 7: Firm Size strengthens (moderates) the relationship between operational expenses and operational revenue (BOPO) on profitability.

The path coefficient was 0.40, indicating a positive interaction effect between BOPO and bank size on ROA. The p-value is 0.05, which is less than 0.05, suggesting that the interaction effect is statistically significant, supporting the hypothesis. The presence of firm size as a moderator exerts a significant influence on the association between Operational Expenses Operational Revenue (BOPO) and Profitability. The study reveals that firm size plays a significant role in enhancing the detrimental influence of BOPO on the profitability of Islamic banks. This finding suggests that as the size of the bank increases, the detrimental effect of BOPO on profitability intensifies. This discovery indicates that the existence of a larger bank size may amplify the detrimental impact of operational expenses on the profitability of Islamic banks.

Discussion

Hypothesis 1: Effect of Capital Adequacy Ratio (CAR) on Profitability (ROA)

The findings of the study suggest that Hypothesis 1 is substantiated, thus implying that CAR possesses a notable and favorable influence on profitability (ROA). A rise in the Capital Adequacy Ratio (CAR) within Islamic banks positively influences their profitability by enhancing their capacity for growth and fostering public confidence in the bank's performance. CAR is an important indicator in determining the bank's capital position, which affects operational efficiency and the bank's ability to manage risks. Bank Indonesia requires a minimum CAR of 8%. From 2018 to 2021, the high CAR levels in Indonesian Islamic banks have had a positive impact on their profitability.

This study's finding supports the findings of Suroso (2022), who stated that CAR has a significant positive influence on ROA in publicly listed banks on the Indonesia Stock Exchange. Petras (2022), who studied banks in Europe, concluded that the use of additional capital has a significant impact on profitability. High capital ratios are associated with better profitability (Kanga et al., 2020). Uddin (2022) concluded that higher capital adequacy ratios significantly enhance the profitability of commercial banks in Bangladesh. Alghifari et al. (2022) stated that capital structure influences profitability. However, these research findings contradict the findings of Bitar et al. (2018), who stated that high capital ratios hurt bank efficiency and profitability.

Hypothesis 2: Effect of Non-Performing Financing (NPF) on Profitability (ROA)

The outcomes of the research indicate that NPF's impact on profitability is positive but insignificant. As a result, Hypothesis 2 was rejected. The findings suggest that non-performing financing does not exert a significant influence on a bank's earnings. Some problematic financing cases exist. They do not considerably affect profitability performance. Instead. The primary determinants of achieving optimal profits are risk management strategies and operational efficiency.

These findings contribute to our understanding of the factors influencing profitability concerning non-performing financing. They support earlier studies conducted by Sitompul and Nasution (2019), Husnadi et al. (2022), and Uddin (2022), which concluded that NPF does not significantly affect the profitability of Islamic Commercial Banks. In contrast, this study does not corroborate Tolo and Firen's (2021) findings, which assessed 200 banks across 30 European countries and concluded that higher NPLs lead to reduced bank profits.

Hypothesis 3: Effect of BOPO on Profitability (ROA)

The investigation outcomes imply that the use of BOPO exhibits a detrimental yet statistically irrelevant influence on profitability, thereby resulting in the rejection of Hypothesis 3. The findings indicate that the proportion of operational expenses to operational revenue has no substantial impact on profitability. While operational expenses have the potential to influence both operational efficiency and performance, this empirical investigation revealed no statistically significant relationship between such expenses and profitability in the specific context under scrutiny. Additional variables such as operational revenue, marketing strategies, and financial management might exert a more significant influence on the overall profitability of the organization. The outcomes offer a more discernible understanding of the connection between operational expenditures and financial profitability.

This research provides further evidence to reinforce the conclusions drawn by Adam et al. (2018) and Uddin (2022), whose studies posit that the quantification of operational efficiency via BOPO exhibits a somewhat negligible yet adverse effect on overall profitability. Nevertheless, the findings obtained from the rigorous analysis conducted herein contradict and challenge the assertions put forth by Sitompul and Nasution (2019) as well as Sihotang & Nasution (2022), whose studies posit a notable link between BOPO and profitability.

Hypothesis 4: Effect of Firm Size on Profitability (ROA)

The study results indicate that bank size does not exert a statistically significant direct effect on its profitability. Therefore, Hypothesis 4, which posited a direct relationship between firm size and profitability, is refuted. In the context of this study, the dimension of a bank is not deemed to have a direct and impactful bearing on its level of profitability.

This finding challenges the conventional notion that bank size is a crucial parameter for predicting profitability. Instead, the examination underscores the importance of additional variables such as operational efficiency, risk management, and business strategy, which might exert a more substantial influence on a bank's profitability. The intricate nature of these variables highlights the need for a nuanced understanding of the factors that influence a bank's fiscal proficiency.

The current study aligns with the research conducted by Adam et al. (2018) and Larasati & Purwanto (2022), both of which found no substantial influence of bank size on profitability. However, it deviates from the findings of Kendo & Tchacounte (2022), which suggested that an increase in assets corresponds to augmented profitability. Additionally, Yadav and colleagues (2021) asserted that an elevation in the growth or size of a bank results in a reduction in the level of profitability experienced.

Hypothesis 5: Effect of CAR on Profitability with Firm Size as a Moderating Variable

The results of the study discovered that Hypothesis 5 is accepted, implying that the organization's size assumes a significant role as a moderating variable in connection to CAR and profitability. This discovery suggests that the size of a bank enhances the influence of CAR on its profitability. In the realm of this investigation, increased bank size has the potential to augment the favorable impact that CAR has on profitability. This highlights the potential impact firm size can have on the relationship between capital adequacy ratio and financial performance.

This study's findings have contributed to a more profound understanding of how firm size, CAR, and profitability interact within the unique context of the Sharia banking industry.

The present research reinforces the investigation conducted by Hasan et al. (2020) and Meshack et al. (2022), which found that firm size exerts a favorable moderating influence on the association between capital structure and financial performance. In contrast, Kirimi et al. (2021) reached a different conclusion, stating that bank size negatively moderates the association between the financial health of commercial banks and profitability.

Hypothesis 6: Effect of NPF on Profitability with Firm Size as a Moderating Variable

The study's findings demonstrate that Hypothesis 6 is invalidated, signifying that the size of a bank does not play a substantial function as an intervening factor in the association between non-performing financing and profitability. Within the confines of this investigation, the size of a bank's dimensions does not exert a significant influence on the imbalanced connection observed between non-performing financing (NPF) and its corresponding profitability. This discovery indicates that variables beyond bank size may exert a more pronounced impact on the association between NPF and financial performance within the examined Sharia banking sector.

These findings align with the investigation conducted by Hasan et al. (2020), which indicated that while assets function as a moderating variable, they do not exert a substantial strengthening effect on the relationship between non-performing financing and profitability. The study additionally corroborates the results obtained by Hapsari (2018), indicating that the size of a bank does not function as a moderator concerning the impact of non-performing financing on financial performance, specifically profitability.

Hypothesis 7: Effect of BOPO on Profitability with Firm Size as a Moderating Variable

The empirical evidence extracted from the study supports the acceptance of Hypothesis 7, thus suggesting a notable impact of firm size in serving as a moderating variable within the correlation between BOPO and profitability. The evidence discovered implies that the size of the bank enhances the influence of BOPO on its profitability within the confines of this investigation. The examined Sharia banking sector exhibits the pivotal influence of bank size in augmenting the correlation between operational expenses, operational revenue, and overall profitability. This finding suggests that as the size of the bank increases, the impact of BOPO on financial performance becomes increasingly noteworthy. Management must consider this factor while striving to effectively manage operational costs and augment profitability.

This study aligns with the findings of Hasan et al. (2020), who stated that assets as a moderating variable significantly influence the relationship between BOPO and profitability.
Contrasting theories on how each variable may relate to bank profitability.

Capital Adequacy Ratio (CAR)
Higher capital adequacy ratios indicate that banks have larger capital buffers to absorb losses and lower default risk (Angbazo, 1997). This implies a positive effect on profitability because banks with stronger capital positions can pursue expansion opportunities and face lower costs from financial distress. However, contrasting perspectives argue that high CAR may reduce profitability. Holding high levels of capital comes at an opportunity cost because it provides lower returns than other assets (Berger, 1995). Maintaining high CAR also constrains banks' lending activities that generate revenue (Pasiouras & Kosmidou, 2007).

Given the stability and growth benefits, this study hypothesizes a positive CAR-profitability relationship. However, the contrasting theories indicate that this relationship may differ across contexts.

Non-Performing Financing (NPF)
Higher NPF suggests poorer asset quality and greater defaults, reducing revenue collection and profitability. However, some studies argue that NPFs have a weak link to profits as banks account for potential losses (Kwan & Eisenbeis, 1997). Manageable NPF levels may not hinder profitability. This study hypothesizes a negative relationship between NPF, and profitability given that defaults directly reduce revenue. However, the weaker association proposed in other studies the context may matter.

Operating Expenses & Operating Revenue (BOPO)
A higher operating efficiency indicated by a lower BOPO should increase profits. Nevertheless, other factors such as fee income play a role, and cost-cutting may jeopardize service quality (Pasiouras & Kosmidou, 2007). If efficiency initiatives do not align with strategic goals, the impact on profitability could be negligible. This study hypothesizes a negative BOPO-profitability link based on operating efficiency, which allows higher net returns. However, the indirect effects of efficiency initiatives make this relationship complex.

Conclusion

The empirical results of this study provide a new understanding of the causal relationship between CAR, NPF, and BOPO with firm size as a moderating variable on profitability in Indonesian Islamic banking. This study yields seven conclusions. **First**, the Capital Adequacy Ratio (CAR) has a significant positive impact on profitability, indicating that a higher capital adequacy ratio contributes positively to profitability. **Second**, Non-Performing Finance (NPF) has a positive but insignificant impact on profitability. The level of problem financing in Sharia banks falls under the low category; hence, it does not significantly affect profitability. **Third**, the variable Operational Cost to Operational Income Ratio (BOPO) has a negative but insignificant impact on profitability. Reducing BOPO can enhance profitability in Islamic banks, albeit not significantly.

Fourth, firm size was found to have a negative but insignificant impact on profitability. This implies that the size of the assets owned by the firm does not guarantee an increase in profitability. **Fifth**, firm size significantly strengthens the impact of CAR on profitability. A better capital structure strengthens the firm's assets, leading to increased profitability. **Sixth**, firm size does not moderate the relationship between NPF and profitability. **Seventh**, firm size significantly moderates the relationship between BOPO and profitability. A more efficient firm performance and stable asset base contribute to increased profitability.

Limitation

The use of secondary data from the annual financial reports of Islamic banks may limit the variability of measurable variables. Additionally, this study only considers the period from 2018 to 2021 and involves 11 Islamic banks in Indonesia; therefore, generalizing the results of this study needs to be done with caution. Furthermore, the use of quantitative methods and Structural Equation Modeling (SEM) analysis has assumptions and limitations that need to be considered.

This study examined specific measures of profitability, capital adequacy, asset quality, efficiency, and firm size. Alternative definitions are considered, such as return on equity (ROE) for profitability or the capital ratio as a percentage of risk-weighted assets. In addition, other factors that may influence bank profitability were not included, such as liquidity ratios, revenue diversification, bank ownership type, and macroeconomic conditions (Brissimis et al., 2008; Trujillo-Ponce, 2013). Examining the effects of CAR, NPF, BOPO, and firm size with other variable definitions and incorporating additional factors could provide further insights into the determinants of profitability.

However, the chosen variables align with recent Islamic bank profitability studies in Indonesia (Adam et al., 2018; Sitompul & Nasution, 2019) and are grounded in prevalent financial theory.

The results provide meaningful evidence for these specific measures in the context examined. Further research can build on these findings by considering additional profitability factors and moderators, but the current variables allow testing of the hypothesized relationships.

Implication

This study implies that Islamic banks need to pay attention to the size of their firms as a moderating factor in the relationship between variables such as CAR and BOPO on profitability. Banks must consider their firm size when planning policies and operational strategies to strengthen the relationship between these factors and the desired level of profitability. Additionally, the finding that NPF does not have a significant influence on profitability can serve as a guide for banks in managing problematic financing risks. These implications can help banks improve their performance and operational sustainability.

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