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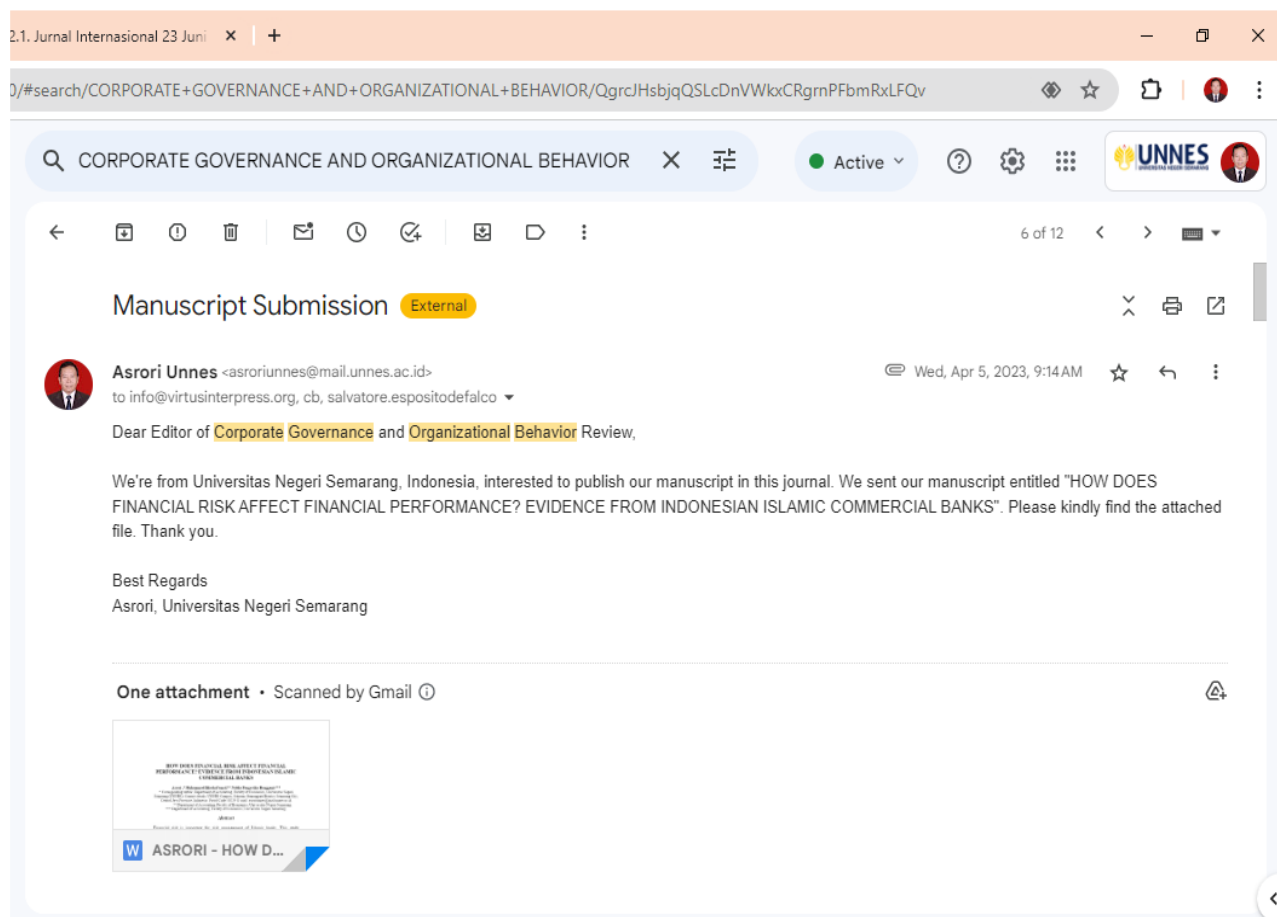
Dear Editor of Corporate Governance and Organizational Behavior Review,

We're from Universitas Negeri Semarang, Indonesia, interested to publish our manuscript in this journal. We sent our manuscript entitled "How Does Financial Risk Affect Financial Performance? Evidence From Indonesian Islamic Commercial Banks". Please kindly find the attached file. Thank you.

Best Regards
Asrori, Universitas Negeri Semarang

HOW DOES FINANCIAL RISK AFFECT FINANCIAL PERFORMANCE? EVIDENCE FROM INDONESIAN ISLAMIC COMMERCIAL BANKS

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Abstract

Financial risk is important for risk management of Islamic banks. This study examines and analyzes the effect of financial risk on the financial performance of Indonesian Islamic Commercial Banks (ICBs), with bank size as a moderating variable. The novelty of this research is analysis of independent hypothesis supported by Stewardship Theory (Donaldson & Davis, 1991), whereas the analysis of moderation hypothesis is supported by Theory of Economies Scale (McGe, J., 2020). Observations were carried out by all Indonesia ICBs during the five periods 2017-2021 and 60 annual observations were selected. The results of independent hypothesis testing state that liquidity risk has no negative effect on financial performance; whereas financing risk and operational risk have negative effects on financial performance. Based on Stewardship Theory, the results of this study indicate that the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesia ICBs are stewards that capable of managing and controlling financing risk and operational risk in a trustful manner in accordance with regulatory provisions to improve its financial performance. On the other hand, from testing the moderation hypothesis it is known that bank size does not reduce the negative effect of liquidity risk on financial performance; while does reduce the negative effect of financing risk and operational risk on financial performance. Based on the Theory of Economies of Scale, the results of this study indicate that Indonesian ICBs, both small and large scale, has implemented Fintech which can provide fast, easy and convenient banking product services for customers, as well as to support the financing and operational risks management properly, in order to reduce problem financing and increase efficiency of funds to generated incame to improve its financial performance.

Keyword: Financial risk, financial performance, bank size.

1. INTRODUCTION

Since Bank Muamalat Indonesia was founded in 1992 as the first Islamic bank in Indonesia, the growth of Islamic banks has increased, the number of Islamic banks in 2022 will be 198 institutions, including 13 Islamic Commercial Banks (ICBs), 20 Islamic Business Units (IBUs) and 165 Islamic Rural Banks (IRBs), which supported total assets of IDR 744.68 trillion, and third party funds of IDR 591.97 trillion, however, the market share and financial performance of Islamic banking is still smaller, the market share is 7.03% and the financial performance is 1.55% (Indonesian Financial Services Authority (OJK), Islamic Banking Statistics, 2022). This phenomenon indicates that rapid growth of Islamic banks are not followed by an increase the market share and the financial performance. As an illustration that the financial performance of Indonesian Islamic banks is still weak, in the Table 1 presents the financial performance of ICBs compared to Conventional Commercial Banks (CCBs) as measured using return on assets (ROA) for the 2017-2021 period.

Table 1. Financial Performance (ROA) of ICBs and CCBs 2017-2021

Bank	Year and ROA				
	2017	2018	2019	2020	2021
ICBs	0,63%	1,28%	1,73%	1,40%	1,55%
CCBs	2,46%	2,47%	2,49%	1,59%	1,85%

Source: (OJK, Islamic Banking Statistics, 2022).

Looking at Table 1, the financial performance of ICBs for the last five years 2017-2021 has been lower than CCBs. In addition, financial performance of ICBs tends to fluctuate, even in 2017, 2018 and 2020 it was below of the standard ROA banking industry is 1.5%. This phenomenon motivated outhors to conduct research concerning the effect of financial risk on financial performance of Indonesian ICBs. This research is seen as an important research alternative, where the implementation of financial risk management in Islamic banks is necessary to ensure that banks don't experience the risk of loss, as well as to improve their financial performance to ensuring the welfare of stakeholders, maintain business continuity, and improve market share.

Islamic banks face various important risks in their business activities. The characteristics of the risks faced by Islamic banks are very different from conventional banks. Therefore the risk management approach of Islamic banks is different from conventional banks, one of which is the profit-sharing financing approach (Aldoseri & Worthington, 2016a). Implementation of risk management for Indonesian Islamic banks is set forth in OJK Regulation No. 65 /Pojk.03/2016 concerning Implementation of Risk Management for Islamic Commercial Banks and Sharia Business Units, it is stated that risk management is a series of methodologies and procedures used to identify, measure, monitor, and control risks arising from all Islamic bank businesses. Implementation of risk management in Islamic banking requires active supervision from the Board of Directors, Board of Commissioners and Sharia Supervisory Board. Islamic banking risk includes financing risk, market risk, liquidity risk, operational risk, legal risk, reputation risk, strategic risk, compliance risk, rate of return risk and equity investment risk.

Risk management Islamic banking can divided into two categories, namely financial risk and non-financial risk (Reyad et al., 2022). Financial risk includes liquidity risk, operational risk, financing risk, rate of return risk and equity investment risk, while, non-financial risks include

legal risk, reputation risk, strategic risk and compliance risk. The focus of this study is to examine and analyze the effect of financial risk on financial performance of Indonesian ICBs. ICBs were chosen as the research target of Islamic banks with the basic reason although the ICBs are only 12 banks, it is smaller than the IBUs are 20 banks and IRBs are 165 banks, however, the market share of ICBs in 2022 of 66.14%, much larger than the market share of IBUs of 32.39% and IRBs of 2.47% (OJK, Islamic Banking Statistics, 2022). In addition, from the legal entity, ICBs are bank entities that carry out their business activities trully based on sharia principles and are stated in their Articles of Association, while SBUs are only work units from the head office of CCBs entities (Law of the Republic of Indonesia No. 21 of 2008 concerning Islamic Banking).

Recent research that examines the implementation of risk management in various sectors and types of industries states that the effect of risk management on company performance varies depending on the sector and type of industry studied (Gouiaa & Issa, 2022). The focus of this research is to examine and analysis the implementation of financial risk on financial performance of Indonesian ICBs. This research is important because of ICBs has different asset and liability characteristics, so their faced different characteristics of the financial risk, such as liquidity risk, financiing risk and operational risk (Aldoseri & Worthington, 2016; Srairi et al., 2022; Darma & Afandi, 2021). The financial risk management that is implemented properly can control financial effectively and improve the financial performance (Reyad et al., 2022). The more effective financial risk is applied both to liquidity risk, financing risk, and operational risk, so the higher the financial performance of Islamic banks (Darma & Afandi, 2021). Implementation of financial risk management in Indonesian Islamic banking requires active supervision from the Board of Directors, Board of Commissioners and Sharia Supervisory Board (OJK Regulation No. 65 /Pojk.03/2016). The results of Darwanto & Chariri (2019)research provide empirical evidence that the Sharia Supervisory Board, Board of Directors and Board of Commissioners have a significant and positive effect on the financial performance of Indonesian Islamic banks seen from the return on assets (ROA) indicator.

Based on the background and several current research results mentioned above, the research questions (RQ) proposed and will be answered through this research are as follows:
RQ 1: How does liquidity risk affect the financial performance of Indonesian ICBs?
RQ 2: How does efficiency risk affect the financial performance of Indonesian ICBs?
RQ 3: How does financing risk affect the financial performance of Indonesian ICBs?

Furthermore, to provide a more in-depth analysis and explanation of the effect of financial risk on the financial performance of Islamic banks in Indonesia. In this study is presented bank characteristic as a moderated variable namely bank size. Because size is an important characteristic banks that can strengthen or weaken the effect of financial risk on the financial performance of the Islamic bank (Darma & Afandi, 2021; Reyad et al., 2022). Therefore, the fourth, fifth and sixth research questions to be answered through this research are:
RQ 4: How does size moderate the effect of liquidity risk on the financial performance of Indonesian ICBs?
RQ 5: How does size moderated the effect of efficiency risk on the financial performance of Indonesian ICBs?
RQ 6: How does size moderated the effect of fianciing risk on financial performance of Indonesian ICBs?

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Financial performance

Financial performance describes the achievement of the bank's goals in obtaining profit which can be measured using the level of profitability. The financial ratio that is commonly used by the banking industry to measure the level of profitability is Return on Assets (ROA), because this ratio shows the ability of a bank to generate profits by managing all of its assets in all of its business activities providing banking products and services (Ardana, 2018). According to OJK Circular Letter No. 6/SEOJK.03/2015 concerning Products and Activities of Islamic Commercial Banks and Islamic Business Units, it is stated that products and services of Islamic banking include raising funds, channeling funds, financing, equity participation, and other banking services that operate based on compliance with Islamic laws and sharia principles.

The recent studies have recommended that the importance of risk mitigation to maintain the reputation of Islamic bank stakeholders and create innovative financing and funding banking products (Falikhatun & Mutiarafah, 2021). The inplementattion of financial risk management in Islamic banks must be able to improve their business efficiency and financial performance to ensure the welfare of stakeholders, as well as to maintain the business continuity in facing an competitive environment in the banking industry (Ben Zeineb & Mensi, 2018). The more effective the implementation of financial risk management, the higher the financial performance of Islamic banks (Reyad et al., 2022).

Recent studies that examine the implementation of financial risk in the form of liquidity risk, financing risk and operational risk on the financial performance of Islamic banks show different results as fellows: First, regarding liquidity risk, several studies state that liquidity risk (FDR) has a positive effect on financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Pujiyanty et al., 2022), whereas, several other studies state that liquidity risk (FDR) has a negative effect on the financial performance (ROA) of Islamic banks (Prasaja, 2018; Dewi & Sudarsono, 2021). Second, concerning financing risk, several studies state that financing risk (NPF) has a negative effect on the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Dasari & Wirman, 2020), meanwhile, other several studies states that financing risk (NPF) has no negative effect on the financial performance (ROA) of Islamic banks (Hanafia & Karim, 2020; Dewi & Sudarsono, 2021). Third, regarding operational risk, several studies state that operational risk (OER) has a negative effect on the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Fatmawati & Hakim, 2020; Hanafia & Karim, 2020;), whereas, other study stated that efficiency risk (OER) had a positive effect on bank financial performance (ROA).

Base on the results of current research, there is still a research gap regarding the effect of financial risk on the financial performance of the Islamic banks. To understand and explain theoretically how the effect of financial risk on the financial performance of Indonesian ICBs in this study is used Stewardship Theory (Donaldson et al., 1991). This theory emphasizes the company's performance is determined by structural conditions in which executive managers as stewards will act effectively and efficiently in managing of the financial risks of the companies from the authority structure of the executive managers role, not being under greater control by the owners, but empowering their executive managers who are autonomous and trusted in taking action to fulfill the interests of the company. Based on the Stewardship Theory (Donaldson et al., 1991) the executive managers of Indonesian ICBs, mainly the Board of Directors, Board of Commissioners and Sharia Supervisory Board are stewards who trusted *(amanah)* in managing liquidity risk effectively and eficiently according to regulations applicable in order to increase the financial performance of Islamic banks. In line with the research results of Ben Zeineb & Mensi (2018) showing that good corporate governance mechanisms in Islamic banking tend to encourage

executive managers to take financial risks in accordance with regulatory to improve financial performance.

The implication of Stewardship Theory (Donaldson et al., 1991) in this study is to explain that the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesian ICBs are stewards who can be trusted *(amanah)* in managing their financial business risks, including liquidity risk, financing risk, and operational risk to obtain optimal financial performance to ensure the welfare of stakeholders, maintain sustainability and enhance business development. Based on the results of several recent studies and explanations of stewardship theory, in this study a hypothesis was developed and proposed for the effect of financial risk on the financial performance of Indonesian ICBs as explained in detail as follows.

2.2. Liquidity risk

Liquidity risk is an important business risk of Islamic banking. Liquidity risk is the financial risk that a bank is unable to meet its maturing obligations from cash flow funding sources and/or from high quality liquid assets that can be used as collateral, without disrupting the activities and financial condition of the bank (OJK Regulation No. 65/Pojk.03/2016). There are two different types of liquidity risk in Islamic banking, namely financial liquidity risk or cash flow risk, and market liquidity risk is also referred such as sharia non-compliance in product provision (Reyad et al., 2022). Focus of this study is financial liquidity risk.

Liquidity risk in Islamic banks is generally measured using the Financial to Deposit Ratio (FDR). FDR shows the level of financial liquidity of Islamic banks in all financing activities provided with sources of funds received from third parties (community savings). The standard liquidity risk for the banking industry yang dikategorikan sehat according to OJK regulations is $80\% \leq FDR \leq 100\%$. Therefore the FDR of the banking industry must be managed effectively so that it is not too large or too small from the standard FDR of the banking industry, and if the FDR exceeds 100% it indicates that the greater the liquidity risk of a bank. Current research states that the effect of liquidity risk on the financial performance of Islamic banks shows different results. Several studies state that liquidity risk (FDR) has a positive effect on the financial performance (ROA) Islamic banks (Agustin & Darmawan, 2018; Darma & Afandi, 2021; Pujiyanty et al., 2022). In several other studies it was stated that liquidity risk (FDR) has a negative effect on the financial performance (ROA) Islamic banks (Prasaja, 2018; Dewi & Sudarsono, 2021).

As a confirmation and to provide an empirical answer to the emergence of the research gaps mentioned above, this research uses the Stewardship Theory (Donaldson et al., 1991) (. Based on OJK Regulation No. 65 /Pojk.03/2016 states that the implementation of Risk Management in Indonesian Islamic banks requires active supervision support from the Board of Directors, Board of Commissioners and Sharia Supervisory Based. Based on the Stewardship Theory (Donaldson et al., 1991) the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesian ICBs diasumsikan sebagai stewards who can be trusted *(amanah)* in managing liquidity risk effectively according to applicable regulations in order to increase the financial performance of Islamic banks. In line with the research results of (Ben Zeineb & Mensi, 2018) showing that good corporate governance mechanisms in Islamic banking tend to encourage executive managers to take liquidity risks in accordance with regulatory limits to improve their financial performance.

This research is focused on identifying and analyzing the implementation of financial risk on the financial performance of Indonesian ICBs. For this fundamental reason, although the number of ICBs is only 12 banks, it is smaller than the number of Islamic Business Units which are 20 banks and Islamic Rural Banks are 165 banks. However, the market share of ICBs in 2022 is 66.14%, much larger than the market share of Islamic Business Units of 32.39% and Islamic

Rural Banks of 2.47% (OJK, Islamic Banking Statistics, 2022). In addition, judging from the institutional and legal entity characteristics, ICBs are bank entities that carry out their business activities based on sharia principles and are stated in their Articles of Association, while Sharia Business Units are work units from the head office of Conventional Commercial Banks entities that function as sharia business units (Law of the Republic of Indonesia No. 21 of 2008 concerning Islamic Banking).

Based on the description above, the first hypothesis proposed in the study is AS follows:

H_1: Liquidity risk (FDR) has a significant negative effect on financial performance (ROA) of Indonesian ICBs.

2.3. Financing Risk

Financing risk is is a very important indicator of business risk in Indonesian Islamic banking (Santoso, 2020; Darma & Afandi, 2021). Even though the channeling of funds to Islamic banks uses a financing mechanism, not a credit mechanism, however, in the risk management regulation of Islamic banks (POJK No. 65/Pojk.03/2016) the term used is credit risk not financing risk. Credit risk is the risk due to the failure of customers or other parties to fulfill their obligations to the Bank in accordance with the agreed agreement, including credit risk due to debtor failure, credit concentration risk, counterparty credit risk, and settlement risk. With the same intention, the term used in this research is financing risk.

Financing risk is the risk caused by the customer's failure to fulfill his obligations to the bank at the maturity date of the financing received. Financing in the banking industry is generally measured using the Non Performing Financing (NPF). The NPF is related to the bank's ability to manage financing problem. Based on the level of financing risk (NPF), Islamic banks are categorized as having problem on financing if the NPF $\geq 8\%$ (Aliannuary, 2018; Darma & Afandi, 2021). Therefore, if Islamic banks can reduce the financing risk (NPF) the losses can be minimized and profits can be incresed, so that the financial performanceof Islamic banks will increase.

The relationship between financing risk (NPF) and financial performance (ROA) of Islamic banks shows a negative influence (Santoso, 2020;Darma & Afandi, 2021). Even though, several current researchs that examine the effect of financing risk (NPT) on the financial performance (ROA) of Islamic banks provide conflicting results. Current Research conducted by Agustin & Darmawan (2018), Santoso (2020), Dasari & Wirman (2020), and Darma & Afandi (2021) stated that financing risk (NPF) has a negative effect on financial performance (ROA). While the other several studies stated that financing risk (NPF) has no negative effect on the financial performance (ROA) (Hanafia & Karim, 2020; Dewi & Sudarsono, 2021).

According to the Stewardship Theory (Donaldson et al., 1991), the implementation of financing risk in Indonesian Islamic banks is supported by the Board of Directors, Board of Commissioners and Sharia Supervisory Board, who as stewards are properly and trustworthy *(amanah)* in managing their financing risk to minimize losses and generate maximum profits, so that the financing risk is smaller and increases the financial performance of Islamic banks. In line with the several recent studies stated that financing risk (NPF) has a negative effect on the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Fatmawati & Hakim, 2020; Hanafia & Karim, 2020).

Based on the description above, the third hypothesis proposed in the study is as follows:

H_2: Financing risk (NPF) has a significant negative effect on the financial performance (ROA) of Indonesian ICBs.

2.4. Operational risk

Operational risk is an important business risk indicator of Islamic banking. Operational risk is the risk of loss caused by inadequate internal processes resulting in internal process failures, system failures, human errors, and/or external events or factors that affect bank operations (OJK Regulstion No. 65/Pojk.03/2016). The operational risks faced by Islamic banks can be divided into three categories namely business risk, sharia non-compliance risk and legal risk (Ben Zeineb & Mensi, 2018). First, business risk, is the operational risk which is a consequence of various types of businesses whether in accordance with sharia principles or not, such as the use in asset-based financing whith murabahah, salam, istisna, and ijarah contacts. Second, sharia non-compliance risk, the risk of non-compliance with sharia rules and principles in the business activities of Islamic banks. Third, legal risk, which arises either as a results of illegal sharia bank business operations or problems of legal uncertainty in interpreting and enforcing Islamic contracts. The focus of attention on the operational risk of Islamic banks in this study concerns business risk.

Operational risk in the business of Islamic banks is generally measured using the operational efficiency ratio (OER) which showed that the efficiency of using operational costs to earn income, the greater the OER the more inefficient the bank, which results in a decrease in the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018a). Facing operational risks in their business requires Islamic banks to be able to manage costs efficiently and maximize cost benefits to generate income. However, recent research shows that the effect of the operational risk (OER) on the financial performance (ROA) of Islamic banks shows different results. Research by(Agustin & Darmawan, 2018; Fatmawati & Hakim, 2020; Hanafia & Karim, 2020) states that operational risk (OER) has a significant negative effect on the financial performance (ROA) of Islamic banks. While other researcher stated that opeasional risk (OER) has a positif effect on the financial performance (ROA) of Islamic banks (Ateeq et al., n.d.)

Implementation of risk management in Indonesian Islamic banks is supported by supervision of the Board of Directors, Board of Commissioners and Sharia Supervisory Board (POJK No. 65/Pojk.03/2016). Based on the Stewardship Theory (Donaldson et al., 1991), the Board of Directors, Board of Commissioners and Sharia Supervisory Board at Indonesian ICBs are stewards who can be trusted *(amanah)* in managing their operational liquidity risk in accordance with applicable regulations to minimize operational risk in order to improve financial performance. In line with the several results of resent research states thad operational risk (has a negative effect on the financial performance of Islamic banks (Agustin & Darmawan, 2018; Fatmawati & Hakim, 2020; Hanafia & Karim, 2020).

Based on the description above, the third hypothesis proposed in the study is as follows:

H_3: Operasional risk (FDR) has a significant negative effect on the financial performance (ROA) of Indonesian ICBs.

2.5. Bank size as moderation

The financial performance of Islamic banks is not only determined by financial risk best practices, but also determined by the size of the bank. It is expected that the larger the size of the bank, the more efficient its operational activities and the bank's performance will increase. However, based on the results of existing research, it was found that there is an opposite relationship between bank size (Total Assets) and the financial performance (ROA) of Islamic banks. However, this relationship is not tatistically significant (Alfadhli & Alali, 2021).To provide an answer to the emergence of a research gap regarding the effect of bank size on the financial performance of Islamic banks. This study presents bank size as a moderator of the influence of financial risk on the financial performance of Indonesian Islamic banks. Then, to develop the hypothesis of bank size as a moderation of the effect of financial risk on financial performance was used of the Theory

of Economies of Scale (McGee, 2015). This theory explains that the management of large economic scale organizations will become more effective and efficient, only if the organization has developed innovative financial technology (Fintech) in its business operations, which can provide information for making the right decision to executives managers in all the lines of the organizational structure; thereby enhancing the development of control techniques based on management accounting, budgeting and cash flow analysis; as well as making the company's products and services provided faster, easier, more effective, efficient, and convenient for its customers.

Theory of Economies of Scale(McGee, 2015) is used in this study because it is supported by the empirical results of several recent studies which state that Islamic banks in Indonesia have developed financial technology (Finthech) based on modern information and communication technology in providing products and services. banking, such as providing digital banking services (Riza, 2019), as well as SMS banking and internet in mobile banking services (Anindyastri et al., 2022). The application of digital banking in the provision of banking products and services has received a positive response and is used by consumers of Islamic banks in Indonesia from the millennial generation(Riza, 2019), and mobile banking services have had a positive impact on increasing the financial performance of Indonesian Islamic banks (Anindyastri et al, 2022).

Based on the description above, the formulation of the fourth, fifth and sixth hypotheses regarding bank size as a moderation the effect of financial risk management on the financial performance of Islamic banks are formulated as fellows:

H_4:   Bank size reduce the effect of liquidity risk (FDR) on financial performance (ROA) of Indonesian CIBs.

H_5:   Bank size reduces the effect of financing risk (FDR) on financial performance (ROA) of Indonesian CIBs.

H_6:   Bank size reduces the effect of operational risk (FDR) on financial performance (ROA) of Indonesia CIBs.

3. RESEARCH METHODOLOGY

In the Section 3 of this research methodology is describe the presentation of sample; data sources, operational definitions and variables measurements; research models; as well as data analysis and hypothesis testing.

3.1. Presentation of sample

Based on the Law of the Republic of Indonesia No. 21 of 2008 concerning Islamic Banking, It is stated that Islamic banks are banks that carry out business activities based on sharia principles or Islamic law. The population of Islamic banks in this study are all Islamic Commercial Banks (ICBs) operating in Indonesia. ICBs is a bank that conducts business activities based on sharia principles and in its activities provides services in payment traffic. The ICBs research sample was selected purposively with the following criteria: First, ICBs have been registered with the Financial Services Authority *(Otoritas Jasa Keuangan/* OJK*)*. Second, ICBs publish annual reports that contain complete information related to the research variables observed during the 2017-2021 period. Based on the criteria, the research sample as presented in Table 2.

Table 2. Research Sample

No	Criteria	2017	2018	2019	2020	2021	Analysis Units
1.	ICBs registered with Indoneian OJK for the 2017-2021 period.	13	14	14	14	12	67
2.	ICBs do not publish financial reports and annual reports containning complete infor-mation regarding research variables.	(1)	(2)	(1)	(1)	(2)	(7)
	Number of Unit Analysis	12	12	13	13	10	60

3.2. Data, operational definitions and variables measurements

This study uses secondary data obtained from annual reports of all ICBs in Indonesia for 5 periods from 2017 to 2021. The data collected includes all research variables including financial performance, liquidity risk, operational risk, financing risk and bank size. The operational definition and measurement of variables is formulated based on OJK Regulations No. 65 /Pojk.03/2016 concerning Implementation of Risk Management for Islamic Commercial Banks and Islamic Business Units, OJK Regulation No. 8/POJK.03/2014 concerning Assessment of Soundness Level of Islamic Commercial Banks and Islamic Business Units, OJK Circular Letter No. 10/SEOJK.03/2014 concerning Assessment of Soundness Level of Islamic Commercial Banks and Islamic Business Units, and its implementation in several recent studies (Agustin & Darmawan, 2018; Santoso, 2020; Dasari & Wirman, 2020; Permata, 2021; Darma & Afandi, 2021; Pujiyanty et al., 2022). Operational definition and measurement of variables in this research are presented in the table as follows.

Table 3. Operational Definitions and Measurement Variables

No	Research Variables	Definitions of Operational Variables	Measurements
1.	Financial Performance	The ability of a bank to obtain profit from its business activities with all of its assets is measured by the profitability level of Return on Assets (ROA).	ROA = Profit Before Tax / Total Assets.
2.	Liquidity Risk	The bank's risk arises from the inability to meet maturing obligations from cash flow funding sources from third party funds used to fund financing, as measured by the Financing to Deposit Ratio (FDR).	FDR = Total Financing / Third Party Funds x 100%.

3.	Financiing Risk	The bank's risk due to customer failure to meet returns on financing received and past due, as measured by Non Performing Financing (NPF).	NPF = Problem Financing / Total Financing x 100%.
4.	Operational Risk	The bank's risk is describes the level of efficiency to control operational costs in carrying out its business activities to obtain operational income, which is measured using the Operating Efficiency Ratio (OER).	OER = Operating Cost / Operating Income x 100%
5.	Bank Size	Bank size shows the scale of the bank as measured by the total amount of financing distributed to customers using mudharabah, musyarakah, murabahah, istishna, ijarah, and qardh contracts.	Bank Size = $\sum$ Total Financing.

3.3. Risearch model

Based on literature review the propose risearh model is presented in Figure 1. The model shows the effects of liquidity risk, operational risk, and financing risk on financial performamce of Indonesia ICBs. This includes testing bank size as a moderating variable for the influence of liquidity risk, operational risk and financing risk on financial performance of Indonesian ICBs.
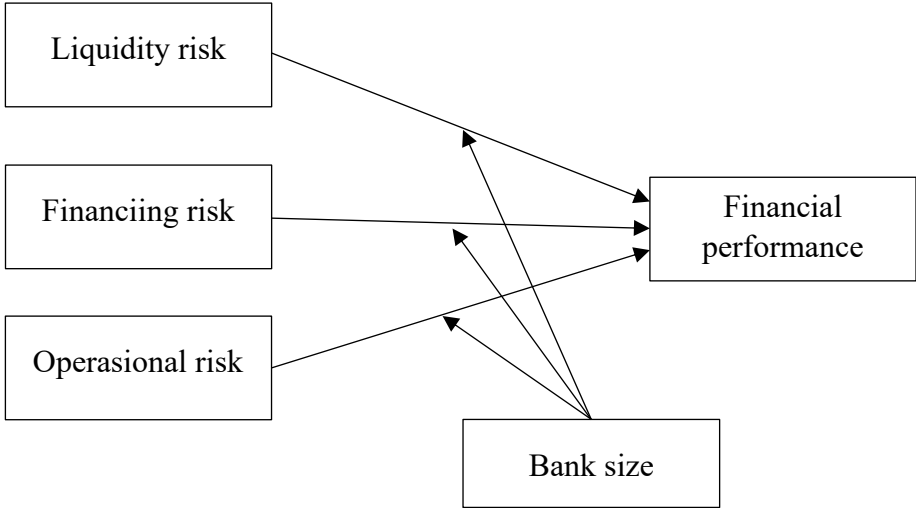
Figur 1. Research Model of Financial Performance

3.3. Data analysis and hypothesis testing

Data analysis in this study used descriptive statistical analysis and panel data regression analysis. Descriptive statistical analysis is used to describe the profile of research variables individually, with the aim of knowing the description of the observed variable data regarding the mean, standard

deviation, variance, maximum and minimum values (Ghozali, 2016). There are two panel data regression models used in this study to test the hypotheses, namely the independent regression panel data model and the moderation regression panel data model.

The independent regression panel data model, is used to test the hypothesis of the effect of the independent variables namely liquidity risk (FDR), financing risk (NPF) and operational risk (OER) on the dependent variable financial performance (ROA) of Indonesia ICBs its used the Multiple Regression Data Panel Equation as follows :

$ROA_{(it)} = \alpha + \beta 1 FDR_{it} + \beta 2 NPF_{it} + \beta 3 OER_{it} + e_{it}$. (Equation 1).

Where ROA : Return on Assets (financial performance); FDR : Financing to Deposit Ratio (iquidity risk; NPF : Non Performing Financing (financing risk); OER : Operational Efficiency Ratio (operational risk); i : Data cross section (bank); t : Data time series (year).

The moderating regression analysis is used to test the effect of the moderating variable on bank size whether it strengthens or weakens the relationship between the independent variables of liquidity risk (FDR), financing risk (NPF) and operational risk (OER) on the dependent variable of financial performance (ROA) of Indonesian ICBs. Moderated Regression Analysis (MRA) is used with the equation:

$ROA_{i\,t} = \alpha + \beta 1\ FDR*SIZE_{it} + \beta 2\ NPF*SIZE_{it} + \beta 3\ OER*SIZE_{it} + e_{it}$. (Equation 2). Where FDR*SIZE: FDR interaction with Bank Size; NPF*SIZE: NPF interaction with Bank Size; OER*SIZE: OER interaction with Bank Size.

Furthermore, to testing the independent and the moderation hupothesis is used a partial test (t test), with the decisions: If the probability value (p) $\leq \alpha=0.05$ the independent variables and moderating variables have no significant effect, and vice versa.

4. RESULT AND DISCUSSION

4.1. Results of descriptive statistical analysis

The variables observed in this study include financial performance (ROA), liquidity risk (FDR), financing risk (NPF), operational risk (OER) and bank size (SIZE). Based on the research variables mentioned above, the results of the descriptive statistical analysis are presented in table as follows.

Table 4. Descriptive Statistical Variables

Variable	Descriptive Statistics			
	Mean	Maksimum	Minimum	Standard Deviation
ROA	0.012593	0.135800	-0.101000	0.037427
FDR	0.842978	1.967300	0.384900	0.189764
NPF	0.036557	0.221400	0.003200	0.034811
OER	0.942730	2.174000	0.575500	0.276656
SIZE	29.83549	32.03420	27.41450	1.049801

Referring to the descriptive statistical variables presented in Table 4, a more detailed description of the research variables can be explained as follows.

1) Financial performance (ROA) an average of 0.012593 (1.26%), when compared to the financial performance standards of the banking industry which are included in the category of healthy banks, which is Standard ROA $\geq$ 1.50%. Judging from its financial performance,

Indonesian ICBs in generaly is not included in the healthy banks category. Standard Deviation ROA=0.37427 > Mean ROA=0.012593 shows that financial performance (ROA) of Indonesian CIBs varies widely, where the highest is 13.58% and the lowest is -10.10%.

2) Liquidity risk (FDR) an average of 0.842978 (84.3%), when compared to the standard liquidity risk of the banking industry which is categorized as healthy banks is 80%<FDR<110%. Judging from its liquidity risk, Indonesian ICBs are categorized as a healthy banks. In addition, it was found that Standard Deviation FDR=0.189764 < Mean FDR =0.842978, shows that the variation in FDR among them was relatively small.

3) Financing risk (NPF) an average of 0.036557 (3.66%), when compared to the standard financing risk of the banking industry which is categorized as healthy banks is NPF<5%. Shows that judging from its financing risk, Indonesia ICBs are categorized as a healthy banks. However, the Standard Deviation NPF= 0.034811 > Mean NPF= 0.036557 indicates that the variation of NPF among Indonesian ICBs is very large, where the largest NPF is 22.1% and the smallest is 0.32%.

4) Operasional risk (OER) of Indonesian CBIs show an average of 0.942730 (94.27%), when compared to the standard operational risk of the banking industry which categorized as healthy banks is 85%≤OER≤94%. Shows that judging from its operasional risk, generally of Indonesian CIBs are categorized as fairly healthy banks. Seen from the Standard Deviation OER=0.276656 < Mean OER=0.942730, shows that the variation operational risk among Indonesian ICBs is relatively small.

5) Bank size (SIZE) of Indonesian CBIs shows Standard Deviation SIZE=1.049801 < Mean SIZE=29.83549 indicating that the variation in bank size among Indonesian CBIS is relatively small.

4.2. Hypothesis testing results

4.2.1. The results of independent hypothesis testing

Determining the appropriate regression panel data model for hypothesis testing the effect of financial risk on financial performance of Indonesia ICBs is very important. To obtain regression panel data model that is feasible to the independent hypothesis testing concerning the effects of liquidity risk (FDR), financing risk (NPF) and risk operational (OER) on financial performance (ROA) of Indonesia ICBs, are used approaach of the coman effect model, fixed effect model, and random effect model. The estimation results of the feasibility of regression panel data model are presented in the following table.

Table 5. Estimation Results of Regression Panel Data Model

Estimation Test	Adjusted R-squered	Results
Commmon Effect Model	0.665502	Independent variables can explain the dependent variable by 66%, and the remaining 34% is explained by other variables.

Fixed Effect Model	0.968847	Independent variables can explain the dependent variable by 96%, and the remaining 4% is explained by other variables.
Random Effect Model	0.860683	Independent variables can explain the dependent variable by 86%, and the remaining 14% is explained by other variables.

Referring to Table 5, the fixed effect model is a suitable model for hypothesis testing, because the independent variables can explain the dependent variable by 96%, which is the highest compared to other models. Furthermore, to ensure that the Regression Panel Data Fixed Effect Model is the most appropriate for testing hypotheses based on data characteristics, the model is tested with the Chow Test and Hausman Test. The results of testing the model was used the Chow and Hausman Tests are presented in the Table 6.

Table 6. Multiple Regression Panel Data Model Fitment Test

Chow Test			
Efect Test	Statistick	d.f.	Prob.
Cross-section F	46.440985	(12.44)	0.0000
Cros-section Chi-Sq	156.893444	12	0.0000
Test Result: Ho: Command effect model; H1: Fixed effect model. Prob. $0.0000 < \alpha = 0.05$, the most appropriate Multiple Regression Panel Data Model for testing the independent hypotheses is the Fixed Effects Model.			
Hausman Test			
Test Summary	Chi-Sq. Statistick	d.f. Chi-Sq.	Prob.
Cross-section random	7.847454	3	0.0493
Test result: Ho: Random Effect Model, H_1: Fixed Effect Model. Prob. $0.0000 < \alpha = 0.05$, the most appropriate Multiple Regression Panel Data Model for testing the hypothesis independent is the Fixed Effect Model.			

Referring to Table 6, both tested using the Chow Test and the Hausman Test, it is known that the Multiple Regression Panel Data Model which is suitable for testing the independent hypothesis of the effect of financial risk on financial performance at Indonesian ICBs is a fixed effect model. Then the results of independent hypothesis testing of the effect of financial risk includes liquidity

risk (FDR), financiin risk risk (NPF) and operational risk (OER) on financial performance (ROA) of Indonesian ICBs using the fixed effect model are presented in table as follows.

Table 7. The Results of Independet Hyphotesis Testing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.089555	0.006740	13.28721	0.0000
FDR	-0.001562	0.005936	-0.263109	0.7937
NPF	-0.161573	0.036624	-4.411611	0.0001
OER	-0.073976	0.004787	-15.45442	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.976767	Mean dependent var	0.012593
Adjusted R-squared	0.968847	S.D. dependent var	0.037427
S.E. of regression	0.006606	Akaike info criterion	-6.978529
Sum squared resid	0.001920	Schwarz criterion	-6.420037
Log likelihood	225.3559	Hannan-Quinn criter.	-6.760072
F-statistic	123.3262	Durbin-Watson stat	2.594497
Prob(F-statistic)	0.000000		

Referring to Table 7 is obtained the multiple regression equation for testing hypothesis independent of the effect of liquidity risk (FDR), financing risk (NPF) and operational risk (OER) on financial performance (ROA) in Indonesian CIBs as follows:

ROA = 0.089555 - 0.001562FDR - 0.161573NPF - 0.073976OER + e.

Based on the multiple regression equation mentioned above, the results obtained from testing the hypothesis regarding the effect of financial risk (liquidity risk, financing risk and operational risk) on financial performance in Indonesian CIBs are presented in Table 8 as follows.

Table 8. Summary of Independent Hypothesis Testing

Hypothesis	Coeeficient	Prob.	Conclusion
H_1: Liquidity risk (FDR) has a significant positif effect on the financial performance (ROA) of Indonesian ICBs.	-0.001562	0.7937	Rejected
H_2: Financing risk (NPF) has a significant negative effect on the financial performance (ROA) of Indonesian ICBs.	-0.161573	0.0001	Accepted
H_3: Operastional risk (FDR) has a significant negative effect on the financial performance (ROA) of Indonesian ICBs.	-0.73976	0.0000	Accepted

4.3.3. The results of moderation hypothesis testing

In addition to examining the effect of financial risk on financial performance, this study also presents a variable bank size as a moderator of the effect of financial risk on financial performance. Then to get the most appropriate moderated regression data panel model used to test the bank size as a moderated of the effect of financial risk on the financial performance of Indonesian ICBs digunakan pendekatan uji Chow, Housmen and Langrange Multiplier (LM), the results of this testing are presented in the Table 10.

Table 10. Moderated Regression Panel Data Model Fitment Test

Chow Test			
Efect Test	Statistick	d.f.	Prob.
Cross-section F	47.831434	(12.44)	0.0000
Cros-section Chi-Sq	158.535716	12	0.0000
Test result: Ho: Command effect model; H1: Fixed effect model. Prob. $0.0000 < \alpha = 0.05$, the most suitable Multiple Regression Panel Data Model for testing independent hypothesis is the Fixed Effects Model.			
Hausman Test			
Test Summary	Chi-Sq. Statistick	d.f. Chi-Sq.	Prob.
Cross-section random			
	6.861540	3	0.0764
Test result: Ho: Random Effect Model, H_1: Fixed Effect Model. Prob. $0.0000 < \alpha = 0.05$, the most suitable Multiple Regression Panel Data Model for testing independent hypothesis is the Random Effect Model.			
Langrange Multiplier (LM) Test			
	Cross-section	Time	Both
Breusch-Pagan	75.405704 (0.0000)	0.931219 (0.3345)	76.38826 (0.000)
Test Resulth: Ho: Random Effect Model, H_1: Fixed Effect Model. The probability value of the Breusch-Pagan Cross-section is $0.0000 < \alpha=0.05$, the most suitable Multiple Regression Panel Data Model for testing moderation hypothesis is the Fixed Effects Model.			

Referring to Table 10, both tested using the Chow Test and Langrange Multiplier (LM) Test, it is known that the Moderated Regression Panel Data Model which is suitable for testing the moderation hypothesis of bank size of effect of financial risk on the financial performance of Indonesian ICBs is the Fixed Effects Model. Then the results of testing moderation hypothesis the bank sice reduce the effects of financial risk includes liquidity risk (FDR), financing risk (NPF)

and operational risk (OER) on financial performance (ROA) of Indonesian ICBs using the fixed effect model are presented in Table 11 as follows.

Table 11. The Results of Moderated Hyphotesis Testing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.090229	0.008475	10.64599	0.0000
FDR_SIZE	-9.85E-06	0.000198	-0.049849	0.9604
NPF_SIZE	-0.005616	0.001220	-4.602622	0.0000
OER_SIZE	-0.002552	0.000159	-16.07069	0.0000

Effects Specification		
	S.D.	Rho
Cross-section random	0.019060	0.8956
Idiosyncratic random	0.006507	0.1044

Weighted Statistics			
R-squared	0.873005	Mean dependent var	0.001977
Adjusted R-squared	0.866201	S.D. dependent var	0.018328
S.E. of regression	0.006704	Sum squared resid	0.002517
F-statistic	128.3202	Durbin-Watson stat	1.958681
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.633740	Mean dependent var	0.012593
Sum squared resid	0.030270	Durbin-Watson stat	0.162846

Based on Table 11, the moderation regression panel data equation is obtained with the following formulation:

ROA= 0.090229-9.85E-06FDR*SIZE-0.005616NPF*SIZE-0.002552OER*SIZE+e
Then, hypothesis testing results of bank size as a moderation of the effects of financial risks on financial performance of Indonesia ICBs is presented in Table 12.

Table 12. Summary of Moderated Hypothesis Testing

Hypothesis	Coeeficient	Prob.	Conclusion
H4: Bank size reduces the negative effect of liquidity risk (FDR) on the financial performance (ROA) of Indonesian ICBs.	-0.985E-06	0.9604	Rejected
H5: Bank size reduce the negative effect of financing risk (FDR) on	-0.005616	0.0000	Accepted

the financial performance (ROA) of Indonesian ICBs.			
H$_6$: Bank size reduce the negative effect of operational risk (FDR) on the financial performance (ROA) of Indonesian ICBs.	-0.002552	0.0000	Accepted

4.3. Discussion

In the discussion section of this research, it describes the identification and analysis of the effect of financial risk which includes liquidity risk (FDR), financing risk (NPF) and operational risk (OER) on financial performance (ROA) of Indonesian ICBs. In addition, it also describes the identification and analysis of bank size as moderating the effect of liquidity risk (FDR), financing risk (NPF) and operational risk (OER) on financial performance (ROA) on Indonesian ICBs.

4.3.1. Liquidity risk on financial performance

The results of this study state that the effect of liquidity risk (FDR) on financial performance (ROA) obtained Coefficient Liquidity Risk of FDR = -0.001562 and Prob. = 0.9604, thus the hypothesis proposed in H$_1$: Liquidity risk (FDR) has a negative effect on financial performance (ROA) on Indonesian ICBs was rejected. The results of this study are in contrast to several recent studies which state that liquidity risk (FDR) has a positive effect on the financial performance (ROA) of Islamic banks ((Agustin & Darmawan, 2018; Darma & Afandi, 2021: Pujiyanty et al., 2022. However, the results of this study are not yet able to support several other recent studies which state that liquidity risk (FDR) has a significant negative effect on the financial performance (ROA) of Islamic banks (Prasaja, 2018; Dewi & Sudarsono, 2021).

Based on the descriptive statistical analysis, it was found that the Mean Liquidity Risk of CIBs Indonesia was FDR=0.842978 (84.29%). Liquidity risk in Indonesian ICBs with FDR = 84.29% is actually still within the standard banking industry liquidity risk limits for the healthy bank category is 80%≤FDR≤100% (OJK Regulation No. 8/POJK.03/2014). However, liquidity risk (FDR) has no significant positive effect on financial performance (ROA) of Indonesia ICBs. The results of this study contradict the findings of the current study by (Reyad et al., 2022) which states that the more effective liquidity risk is according to regulatory limits, the higher the financial performance Islamic Bank.

The results of this study show that the mean FDR in Indonesian ICBs is 84.29%, this indicates that funds collected from third parties (public savings) have not been channeled optimally in the form of financing within the framework of improving their financial performance (ROA). The findings of this study are not in line with the results of recent research by Ben Zeineb & Mensi (2018) states that good corporate governance in Islamic banking tend to encourage executive managers to take large liquidity risks to improve their financial performance (ROA). It was explained that the greater the third party funds that are invested as financing funds for customers, it will indeed increase liquidity risk (FDR), but if the issue of non-performing financing can be managed properly, the financial performance (ROA) of the Islamic bank will increase.

Referring on OJK Regulation No. 65 /Pojk.03/2016 concerning Implementation of Risk Management for Islamic Commercial Banks. It is stated that the implementation of Risk Management requires active supervision from Board of Directors, Board of Commissioners and Sharia Supervisory Board. Based on the Stewardship Theory (Donaldson et al., 1991) it is indicated that the Board of Directors, Board of Commissioners and Sharia Supervisory Board, they

have not fully played their role as stewards who are trustworthy *(amanah)* in managing liquidity risk in accordance with applicable regulations. Based on the results of this study, it is recommended that the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesian ICBs be more active in providing supervision and oversight of liquidity risk management in accordance with regulatory provisions by prioritizing the use of funds from third parties to increase financing to customers so that the financial performance of ROA can be improved.

4.3.2. Financiing risk on financial perfoemance

Financing risk is the most important management risk in the Islamic and conventional banking (Rinawati & Santoso, 2019, and Darma & Afandi, 2021). The results of the independent hypothesis testing in this study stated that financing risk (NPF) had a significant negative effect on financial performance (ROA) of Indonesian ICBs, so the second hypothesis (H_2) proposed in this study was accepted. The results of this study are in line with the several recent studies which state that financing risk (NPF) has a negative effect on the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Santoso et al., 2023; Dasari & Wirman, 2020; Darma & Afandi, 2021). Thus, the increase financing risk is not caused by the total amount of financing, but by how Islamic banks analyze and manage their financing. Shows that the increase of financing carried out by Islamic banks is still followed by good financing management (Widya & Nugrahani, 2018).

Based on the descriptive statistical analysis, the Mean NPF for Indonesian ICBs is 0.036557 (3.66%). According to OJK, the NPF standard for the banking industry that is categorized as a healthy bank is NPF $\leq$ 5% (OJK Regulation No. 8/POJK.03/2014), while several recent researchers indicated that Islamic banks are categorized as having problems on financing if the NPF is $\geq$ 8% (Aliannuary, 2018; Darma & Afandi, 2021). Judging from the financing risk of ICBs is NPF=3.66% < NPF standard of healthy bank industry is 5%, this result of the study stated that the Indonesian ICBs are included in the healthy banks categories. According to the Stewardship Theory (Donaldson et al., 1991) its indicate that the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesian ICBs are stewards who manage financing risk properly to applicable regulations and to improve their financial performance.

4.3.3. Operasional risk on financial performance

Operational risk is the risk of loss caused by inadequate internal processes resulting in system failure, human error, and/or external events that have a negative impact on bank operations (OJK Regulation No. 65/Pojk.03/2016). This study states that from the results of independent hypothesis testing it is empirically proven that the effect of operational risk (OER) has a significant negative effect on financial performance (ROA) of Indonesian CBIs, so that the third hypothesis (H_3) proposed in this study is accepted. The results of this study support recent research which states that operational risk has a negative effect on financial performance of Islamic banks ((Agustin & Darmawan, 2018; Fatmawati & Hakim, 2020; Hanafia & Karim, 2020; and . Darma & Afandi, 2021)

Referring to the results of descriptive statistical analysis, Indonesian ICBs has a Mean Operational Risk (OER) of 0.942730 (94.27%). According to standard operating risk regulations for the banking industry which is categorized as a healthy bank with an operational risk of 85% $\leq$ OER $\leq$ 94% (OJK Regulation No. 8/POJK.03/2014). The results of this study indicate that Indonesian CIBs are in the fairly healthy bank category, because their OER is 0.27% greater than the industry standard OER of a bank which is truly categorized as a healthy bank. As stated by

Agustin & Darmawan (2018) stated that the greater of the operational risk (OER), the more inefficient is the bank, because the operational costs are greater than the operational income.

Islamic banks have different characteristics of assets and liabilities compared to conventional banks, so that the operational risks faced by Islamic banks are also different from conventional banks (Aldoseri & Worthington, 2016), Islamic banks are more susceptible to operational risks and risks of non-compliant sharia, while conventional banks are more vulnerable to credit risk and bankruptcy risk (Elgharbawy, 2020). Facing operational risks are requiring Islamic banks to be able to manage costs efficiently and cost benefits to generate maximize income. The results of this study shows that operational risk has been carried out properly by the Board of Directors, Board of Commissioners and Sharia Supervisory Board of ndonesian ICBs, so that it can actually improve their financial performance.

According to the Stewardship Theory (Donaldson et al., 1991), the result of this study it is indicated that the implementation of operational risk management of Indonesian ICBs is well supervisan by the Board of Directors, Board of Commissioners and Sharia Supervisory Board, whos act as stewards that trustworthy *(amanah)* in managing the operasional risks to improve the financial performance. However, considering that the level of operational risk in Indonesian CIBs is OER=94.27% which is still relatively higher to the standard operational risk in the banking industry which is categorized as a healthy bank, which is $85\% \leq OER \leq 94\%$, it is recommended that operational risk management in Indonesian CIBs be carried more effectively and efficiently so that operational costs are utilized optimally to obtain maximum income within the framework of improving its financial performance.

4.3.4. Bank size as moderation effect financial risk on financial performance

Bank size (SIZE) in this study is measured by the amount of ICBs financing, either through a profit sharing-based financing mechanism with Mudarabah and Musyarakah contracts, a sales-based financing mechanism with Murabahah and and Istishna contracts, a financing mechanism based on lease with Ijarah contract, as well as a non-commercial financing mechanism with qord contracts. The type of financing mechanism carries unique characteristics of liquidity risk (FDR), financing risk (NPF) and operational risk (OER) and their effects on financial performance (ROA) among Indonesian ICBs.

The results of testing the moderation hypothesis proposed in the fourth hypothesis (H_4) that bank size reduces the negative effect of liquidity risk (FDR) on financial performance (ROA) of Indonesian ICBs, is rejected. Shows that bank size depends on total financing can't reduce the negative effect of liquidity risk on the financial performance. The results of this study shows that bank size has no significant effect of financial risk on financial performance in Islamic banks, both large and small banks. Therefore, the ability of Indonesian ICBs to manage and control liquidity risk needs to be improved by prioritizing third party funds to be invested in profitable financing to improve their financial performance.

Then related to the fifth hypothesis (H_5) bank size reduces the negative effect of financial risk (NPF) on financial performance (ROA) of Indonesia ICBs, is accepted. The results of this study support recent research which states that increasing the amount of financing carried out by Islamic banks is followed by appropriate, effective and efficient financing risk management to improve their financial performance. Shows that ICBs Indonesia's financing risk management has been carried out optimally by taking into account the size of the amount of their financing and the type of risk in each financing mechanism. namely through mudharabah and musyarakah profit sharing financing, murabahah and istishna sales financing, ijarah lease financing, and qord non-commercial financing, as well as other appropriate and profitable financing mechanisms to

improve its financial performance. Based on Theory of Economies Scale (McGee, 2015) the results of this study indicate that financing risk management at Indonesia ICBs has been supported by innovative Fintech which makes it possible to oversee and decide on the determination and implementation of profitable financing mechanisms, and to eliminate problematic financing such as non-current financing, doubtful financing and bad financing, to improve its financial performance.

Finally, regarding the sixth hypothesis (H6) bank size reduces the negative effect of operational risk (NPF) on financial performance (ROA) of Indonesian ICBs, is accepted. The results of this study support recent research which states that Islamic banks in Indonesia have developed innovative financial technology (Finthech) in providing banking products and services, such as providing digital banking services (Riza, 2019). Based on the Theory Economies of Scale (McGee, 2015) the results of this study indicate that innovative financial technology developed in providing banking products and services at Indonesian ICBs has succeeded in supporting operational risk management in a proper, effective and efficient manner. Both in large-scale and even small scale of ICBs can utilize operational costs more efficiently in order to obtain optimal operating income. It is recommended for future researchers to examine and analyze the extent to which Fintech supports the implementation of risk management of Indonesian Islamic banks to improve their performance, both financial performance and Islamic performance.

5. CONCLUSION

The rapid growth of Islamic banks in Indonesia has not been followed by the ability to increase market share and financial performance. This research aims to examine and analyze the effect of financial risk influences on financial performance in Indonesian ICBs, with bank size as moderation. Therefore, in this study there are two types of hypotheses, namely the independent hypothesis and the moderation hypothesis. The independent hypoytesis concerning the effects of liquidity risk (FDR), financiing riks (NPF) and opersional risk (OER) on financial performance (ROA) of Indonesian ICBs. Whereas, the moderation hyphotesis concerning bank size as moderating of the effects of liquidity risk (FDR), financiing riks (NPF) and opersional risk (OER) on financial performance (ROA) of Indonesian ICBs.

The results of independent hypothesis testing in this research state that: First, liquidity risk (FDR) has no significant negative effect on the financial performance (ROA) of Indonesian ICBs. Shows that third party funds haven't been optimally invested through proper and profitable financing mechanisms to improve their financial performance. Second, financing risk (NPF) has a significant negative effect on the financial performance (ROA) of Indonesian ICBs. Shows that financing risk has been properly managed and controlled to minimize problematic financing such as substandard, doubtful and loss financing, in order to improve its financial performance. Third, operational risk (OER) has a significant negative effect on ICB Indonesia's financial performance (ROA). Shows that operational risk management and control has been carried out properly in utilizing operational costs efficiently to generate operating income in order to improve its financial performance. Based on the Stewardship Theory (Donaldson & Davis, 1991) the results of this study indicate that the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesian ICBs are stewards who have managed and controlled financing risk and operational

risk properly and reliably, according to regulatory provisions to minimize the emergence of problem financing , and maximize the efficiency of operational cost utilization to generate operating income, within the framework of improving its financial performance.

Furthermore, regarding testing the moderation hypothesis the research results state as follows: First, bank size cannot reduce the negative effect of liquidity risk (FDR) on financial performance (ROA) of Indonesian ICBs. Shows that the effect of the liquidity risk on the financial performance of Indonesian ICBs doesn't depend on the size of the total financing both large and small banks. It is suspected that the management and control of liquidity risk at ICBs Indonesia has not taken into account the volatility of third party funds and their use for investment through appropriate financing to improve their financial performance. Second, bank size reduces the negative effect of financial risk (NPF) on financial performance (ROA) of Indonesian ICBs. Stated that financing risk management and control can be carried out properly of Indonesian ICBs by taking into account the amount and type of non-performing financing risks channeled through financiing types of profit-sharing based on mudarabah and musyarakah contracts, sales-financiing based on murabahah and istishna contracts, leas-financing based on ijarah contracts, and other financing mechanisms to improve their financial performance. Third, bank size reduces the negative effect of operational risk (FDR) on financial performance (ROA) of Indonesia ICBs. Shows that the management and control of operational risk at ICBs Indonesia has paid attention to the efficient use of operational costs to generate operating income for all types of financing in order to improve their financial performance. Based on Theory of Economies of Scale (McGee, 2015) the results of this study indicate that the management and control of financing risks and operational risk of Indonesian ICBs, both small and large scale banks, have been supported by sophisticated Fintech via SMS, internet and digital banking which provide speed, convenience and comfort services for customers, as well as reducing the risk of non-performing financing, and increasing the effectiveness and efficiency of using operational costs to obtain optimal operating income in order to improve its financial performance.

The novelty of this study is compared with several recent studies, particularly those that test and analyze the financial performance of Islamic banks using the dependent variable financial risk and the moderating variable of bank size as follows: First, it concerns the development and testing of independent hypotheses about the effects of liquidity risk, financing risk and operational risk on the financial performance of Indonesia ICBs and its analysis. In addition to paying attention to the recent research results, this study uses Stewardship Theory(Donaldson et al., 1991) to obtain a broader and deeper analysis of research results so that it is useful for academics, practitioners and Islamic banking supervisory authorities to understanding, explaining, and implementing the effects of liquidity risk, financing risk, and operational risk on inancial performance of Indonesia ICBs in a comprehensive manner. Taking into account the dimensions of financial risk and the dimensions of human resource competence, particularly the competence of the Board of Directors, Board of Commissioners and Sharia Supervisory Board to supervise and control of financial risks to improve the financial performance of Islamic banks.

The limitations of this research are was only conducted at Islamic banking institutions in the form of ICBs and observations were made only for five periods. It is hoped that further research

will make broader observations of both ICBs and IBUs with observations that are longer than five periods.

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18 Mei 2023. Review artikel "Examining The Moderating Effect Of Bank Size On The Financial Risk And Performance Linkage Of Islamic Commercial Banks.

Valeriia Syromlia <cb@virtusinterpress.org>
to me

May 18, 2023, 10:30 PM

Dear Asrori,

Hope you are doing well.

Please find the reviewer's report and the editorial note on your paper *"HOW DOES FINANCIAL RISK AFFECT FINANCIAL PERFORMANCE? EVIDENCE FROM INDONESIAN ISLAMIC COMMERCIAL BANKS"* submitted to the journal *Corporate Governance and Organizational Behavior Review* attached below. The paper requires certain adjustments before it can be accepted.

Please, be so kind as to address the comments provided by the reviewer and resubmit the paper by **June 2**.

Please highlight all modifications to be introduced in the paper if possible or please provide a table/a letter to the reviewer that includes information how the reviewer's comments were addressed.

In attachment, you may also find the originality report.

If you have any questions, please let me know.

Please kindly confirm the receipt of this email.

Kind regards,
Valeriia

пн, 10 квіт. 2023 р. о 11:07 Asrori Unnes <asroriunnes@mail.unnes.ac.id> пише:

•••

2 Attachments • Scanned by Gmail ⓘ

📄 Reviewer's Repor...   📄 Originality report...

Dear Asrori,

Hope you are doing well.

Please find the reviewer's report and the editorial note on your paper *"HOW DOES FINANCIAL RISK AFFECT FINANCIAL PERFORMANCE? EVIDENCE FROM INDONESIAN ISLAMIC COMMERCIAL BANKS"* submitted to the journal *Corporate Governance and Organizational Behavior Review* attached below. The paper requires certain adjustments before it can be accepted.

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If you have any questions, please let me know.

Please kindly confirm the receipt of this email.

Kind regards,
Valeriia

Reviewer's Report

Journal:	Corporate Governance and Organizational Behavior Review		
Title of the paper:	**HOW DOES FINANCIAL RISK AFFECT FINANCIAL PERFORMANCE? EVIDENCE FROM INDONESIAN ISLAMIC COMMERCIAL BANKS**		
Date of the Review completion:	15 May 2023		
Please choose options that can characterize the paper:			
Originality and importance of the paper to the field of research:	Medium		
The **structure** of the paper:	Is easy to follow and understand		
Please tick relevant for the **abstract**	The abstract provides an accurate summary of the manuscript (including aim, methods, key results and relevance of the study)	☐ yes	☒ no
	The abstract contains unnecessary information (please explain)	☒ yes	☐ no
	Is the abstract of appropriate size? (150-200 words)	☐ yes	☒ no
Please tick relevant for the **introduction**	Does the introduction identify the purpose of the paper or hypothesis and set the paper within the broader research perspective?	☒ yes	☐ no
	The introduction puts the rest of the paper into perspective (explains paper's structure)	☐ yes	☒ no
Methods used in the paper:	Suit the aim of the research		
	Does the methodology part allow replicating or reproducing results (to check them or to perform a similar study)?	☒ yes	☐ no
	If empirical study: is the sample size large enough and was selected in an appropriate way (leave blank if not acceptable)?	☒ yes	☐ no
Results and discussion:	Are the interpretations provided by the author(s) supported by the findings obtained in the study?	☒ yes	☐ no
Are there any **figures or tables** that have to be corrected / deleted?	Yes, some corrections need to be done (please explain)		
	Are the figures and/or tables clear and you can understand their essence?	☒ yes	☐ no
Conclusions:	Do not reveal main findings of the paper		
	Conclusions are supported by the findings, analysis and interpretations of the author(s)	☒ yes	☐ no
	Does the conclusion section repeat the abstract of the paper?	☒ yes	☐ no
References	Are all references in the list used in the paper?	☐ yes	☒ no
	Are the number, relevance and "age" of the citations appropriate?	☒ yes	☐ no
Language of the paper:	Is low, majour revisions needed		
Length of the paper:	Is appropriate		
What is your main verdict?	Accept paper with the changes that should be made by the author/authors		
Field for the comments of the reviewer:			

The paper needs several significant improvements before it is considered for publication. Following are a few insights:

1. The paper is full of grammatical errors, poor punctuation, typos, and spelling mistakes at several places (like 'uthors' instead of 'authors' below table 1, truly is written as trully, follows written as fellows, operational as Operasional, research as risearch and several others). A thorough proofreading and rectification of all these errors is a must.

2. The abstract needs correction. It is very elaborate and has to be reduced. It mentions that 'the results of independent hypothesis testing state that liquidity risk has no negative effect on financial performance, whereas financing risk and operational risk have negative effects on financial performance.', which is not correct, as the study shows that there is no SIGNIFICANT

negative impact. The word 'significant' is very important here. It is also mentioned that 'Based on Stewardship Theory, the results of this study indicate that the Board of Directors, Board of Commissioners and Sharia Supervisory Board of Indonesia ICBs are stewards that capable of managing and controlling financing risk and operational risk in a trustful manner in accordance with regulatory provisions to improve its financial performance', which not established in the study.

3. Please clarify how your study is in line with the Stewardship Theory (Donaldson et al., 1991) which mentions that stewards are entrusted to manage their financial business risks, including liquidity risk, financing risk, and operational risk to obtain **optimal** financial performance to ensure the welfare of stakeholders, maintain sustainability and enhance business development? You have mentioned in your study that the financial performance (ROA) of ICB is below the average industry standard, then how the optimal financial performance is achieved?

4. The hypothesis framing is not correct. While your research questions are 'How does liquidity risk affect the financial performance of Indonesian ICBs' and so on, your hypothesis is not neutral. Your hypothesis states that Liquidity risk negatively affects financial performance (ROA), which is not advisable. Besides, risks are important for return as well. So many studies have stated that liquidity risk (FDR) has a positive effect on the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Pujiyanty et al., 2022), then how can you frame a hypothesis where by default it is considered that financial or liquidity or operational risk impact financial performance negatively? The first question should be whether liquidity risk impacts ROA or not and then you can find or interpret whether the effect is positive or negative. All the hypothesis framing needs rectification.

5. There have already been many studies on Islamic Commercial banks analyzing the impact of liquidity, financing, and operational risks on financial performance. Then how your study is different from those? Is your period of study different or have you used a different methodology? Please mention. The research gap is not identified properly.

6. Full form of SBU has not been mentioned anywhere. Are CIBs and ICBs the same? What is the full form of CIB?

7. In Results and Discussion, point no. 3 about Financing Risk, the SD is not greater than the mean, but almost close to the mean (Standard Deviation NPF= 0.034811 is not greater than Mean NPF, which is 0.036557). Please rectify.

8. Please include the calculated value of the research variable used like ROA, Financing to Deposit Ratio (FDR), NPF, OER, and total financing (size), on which the independent regression panel data model is applied in the form of a table in appendix.

9. Tables need to be corrected. In Table 4, maximum is mispelled as maksimum, in Table 8, correct the spelling of 'operational' and 'positive'; wrong H1 is written in Table 8; in Table 10, in Hausman test, p value is not less than α = 0.05, please rectify and also correct the spelling of 'result'.

10. There are missing references (eg Pujiyanty et al., 2022).

Editorial Note

1) The length of the paper should amount to no more than 10,000 words.

2) As far as the *Corporate Governance and Organizational Behavior Review* is an international journal, it is recommended not to indicate titles of individual countries in the titles. However, you are free to indicate this information in the abstract, keywords and throughout the paper.

3) It is recommended not to use "?" in the title. Please adjust it, if possible.

4) Please add at least 3 JEL classification codes for your research. You can use the link: https://www.aeaweb.org/jel/guide/jel.php

5) Please provide 3 more key words (that correlate with the title and abstract of the research as well as the key topics of the journal).

6) The abstract is too *long* (280 words), the appropriate length would be 150–200 words.

7) It's not recommended to include tables and figures in the "Introduction" section, so, if possible, please place them in any other section of the paper.

8) In the "Introduction" section please add one more paragraph describing in detail the general structure of the paper.
(e.g., The structure of this paper is as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used to conduct empirical research on...).
This paragraph should be placed at the very end of the Introduction.

9) "Research Methodology" section should contain a description of the alternative methods that would be suitable for conducting the research.

10) We recommend splitting up the section "Result and Discussion" into two different parts: "Results" and "Discussion".

11) Please make sure that all the references cited in the paper are included in the reference list and all the sources in the reference list are properly cited in the paper.

12) Please provide editable version of figures, tables and models.

13) All the submissions go through a plagiarism check (please see the attached report). The percentage is **35**, however, the acceptable percentage in order to continue on with the publishing procedure is no more than **20**. Please just rephrase some paragraphs of the paper (highlighted with some colour in the originality report).

14) The paper requires English proofreading (language and typos) so that your paper may be read and cited by a wide audience of readers throughout the world.
If you want the team of Virtus Interpress to do English proofreading of your paper, you may order this service at a moderate fee (90 EURO). We'll do this work professionally, qualitatively and within a short period of time (up to one week). Or, you may kindly do it by yourself.

15) It is recommended including Acknowledgements that recognise the importance of contributions made by other researchers to the paper submitted (that have not been included in the paper authorship) or organisations (universities, grants numbers, etc.) which provided funds for conducting the research (if any).

9 Juni 2023. Lanjutan Review artikel "Examining The Moderating Effect Of Bank Size On The Financial Risk And Performance Linkage Of Islamic Commercial Banks.
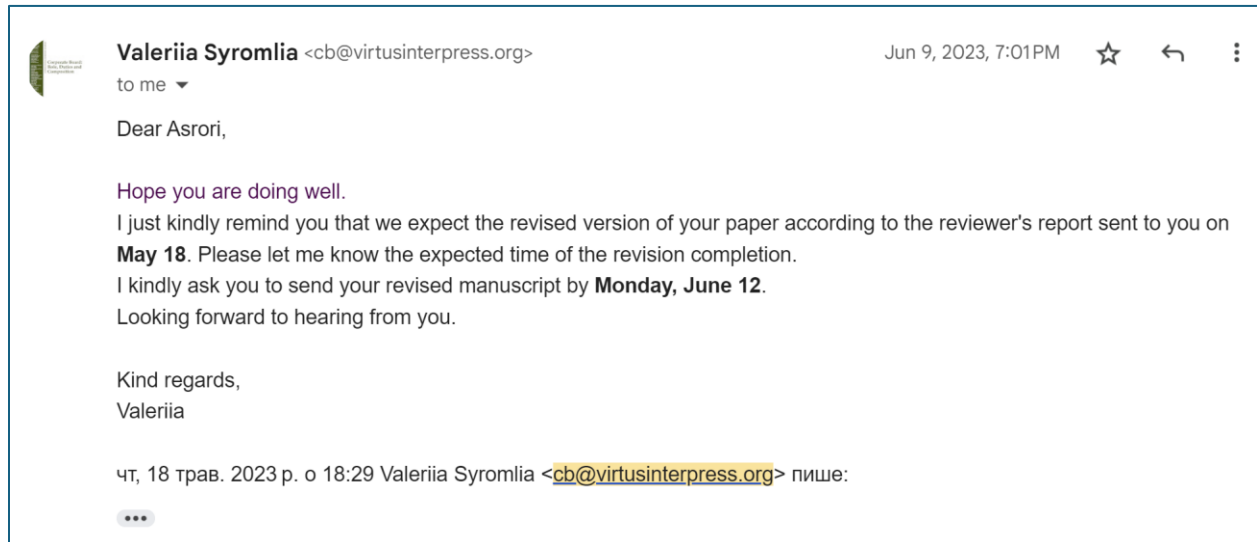
Dear Asrori,

Hope you are doing well.
I just kindly remind you that we expect the revised version of your paper according to the reviewer's report sent to you on **May 18**. Please let me know the expected time of the revision completion.
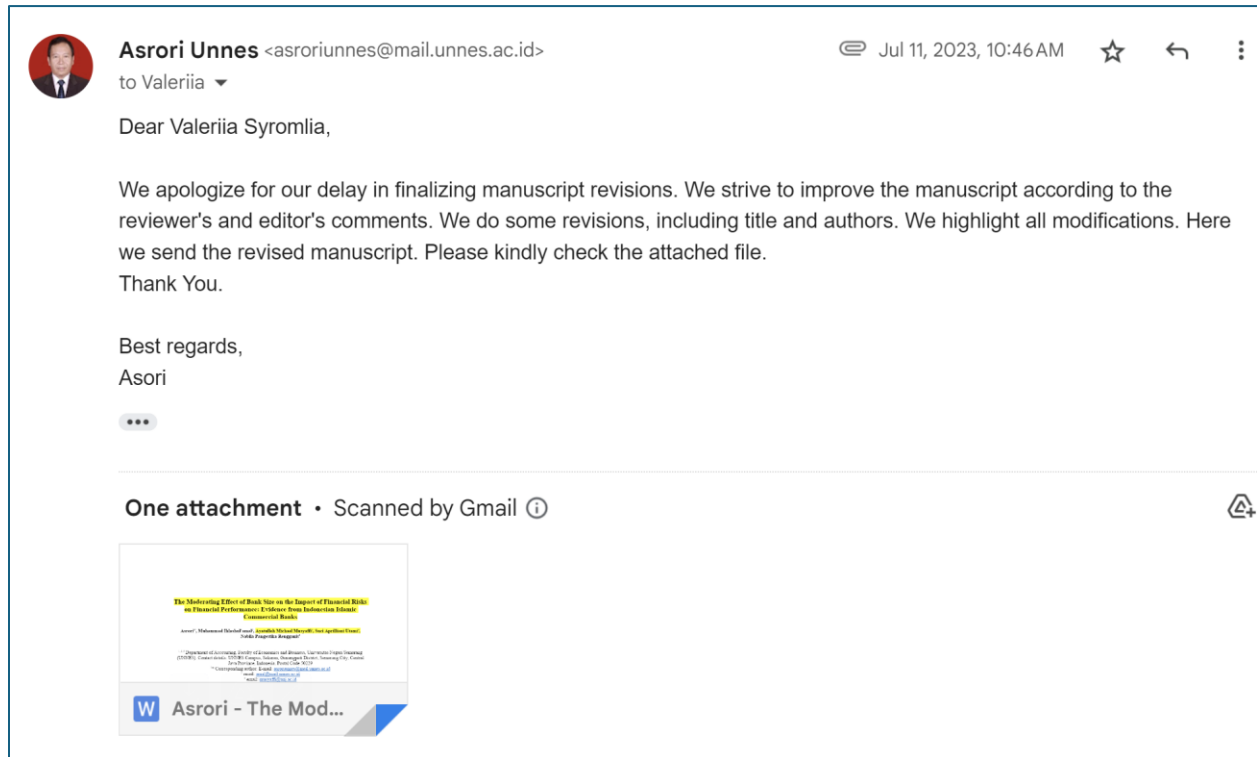I kindly ask you to send your revised manuscript by **Monday, June 12**.
Looking forward to hearing from you.

Kind regards,

Valeriia

11 Juli 2023. Hasil revisi artikel "Examining The Moderating Effect Of Bank Size On The Financial Risk And Performance Linkage Of Islamic Commercial Banks.**

Dear Valeriia Syromlia,

We apologize for our delay in finalizing manuscript revisions. We strive to improve the manuscript according to the reviewer's and editor's comments. We do some revisions, including title and authors. We highlight all modifications. Here we send the revised manuscript. Please kindly check the attached file.
Thank You.

Best regards,
Asori

The Moderating Effect of Bank Size on the Impact of Financial Risks on Financial Performance: Evidence from Indonesian Islamic Commercial Banks

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Abstract

Financial performance is critical for Islamic Banks to ensure their business continuity in providing banking products and services per Sharia principles or Islamic law. This research examines the impact of financial risk on the financial performance of Indonesian Islamic Commercial Banks (ICBs), with bank size as a moderating variable. The research was conducted on all Indonesian ICBs from 2017-2021. Fixed effect models are employed to account for potential heterogeneity across banks and control for time-invariant unobserved factors. These models allow for estimating the within-bank variation over time, capturing constant bank-specific characteristics over the study period. The results of this research state that financing and operational risks significantly negatively impact financial performance. In contrast, liquidity risk does not significantly negatively impact financial performance. Furthermore, from testing the hypothesis of total financing moderation, the results of this research state that total financing reduce the significant negative effect of financing risk and operational risk on the financial performance of Indonesian ICBs. However, total financing does not reduce the significant negative effect of liquidity risk on the financial performance of Indonesian ICBs.

Keyword: Financial risk, financial performance, bank size.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Islamic Bank, according to the Law of the Republic of Indonesia No. 21 of 2011 concerning Islamic Banking, are Banks that carry out their business activities based on Sharia Principles and by type consist of Islamic Commercial Banks and Islamic People's Financing Banks. Islamic Commercial Banks (ICBs) are Islamic Banks that provide services in payment traffic. The main business activity of ICBs is to collect and distribute funds to the public using Sharia principles or Islamic law, which do not contain usury, uncertainty, gambling, tyranny, and other unlawful elements prohibited in Islamic law (Estiawan & Asrori, 2021). The role of ICBs in Indonesia in providing banking products and services under Sharia principles or based on Islamic law is crucial, in line with its potential as a country with the largest Muslim population in the world. Based on data from the Central Statistics Agency for 2022, it is stated that Indonesia's population at the end of 2022 will be 277.75 million people, of which 241.7 million people (87%) are Muslims.

ICBs have been operating in Indonesia since 1992, with the establishment of Bank Muamalat Indonesia (BMI) as the first Islamic bank. In its development at the end of 2022 in Indonesia, there are 13 ICBs supported by total assets of IDR 520.89 billion. The financial performance of Islamic banks can be seen from the profitability ratio Return on Assets (ROA), which describes their performance in achieving profits by managing their total assets (Fatmawati & Hakim, 2020a). Referring to the Islamic Banking Statistics from the Indonesian Financial Services Authority (OJK), the financial performance (ROA) of Indonesian ICBs for the five years from 2017 to 2021 is presented in Table 1.

Table 1. Financial Performance (ROA) of Indonesian ICBs 2017-2021

(Nominal in IDR billion)

No.	Description	2017	2018	2019	2020	2021
1.	Total Profit	1.426	3.806	5.598	5.087	4.204
2.	Total Assets	225.804	298.044	323.436	382.692	205.342
3.	Return on Assets (ROA)	0.6%	1.28%	1.73%	1.40%	2.05%

Source: Indonesian OJK, Islamic Banking Statistics 2017-2021.

The financial performance of Indonesian ICBs in the five years from 2017 to 2021, as presented in Table 1, shows various symptoms, where an increase only sometimes follows an increase in total assets in profits achieved. The financial performance (ROA) achievement at Indonesian ICBs 2017-2021 varies greatly every year, so the financial performance of Indonesian ICBs in this study is a fascinating phenomenon to identify and analyze what factors lead to this.

Recent research which examined the financial performance of conventional and Islamic banks in Indonesia for the 2012-2016 period stated that the financial performance of Indonesian banks was determined by financial risk (Saiful & Ayu, 2019). Referring to the Sharia Banking Statistics published by Indonesian OJK, it is stated that the financial risks of Indonesian ICBs for five years from 2017 to 2021 include liquidity risk (Financing to Deposit Ratio/FDR), financing risk (Non et al./NPF), and operational risk (Operational Efficiency Ratio/OER) is presented in Table 2 as follows.

Table 2. Financial Risks of Indonesian ICBs in 2017-2021

No.	Types of Financial Risk	2017	2018	2019	2020	2021
1.	Liquidity Risk (FDR)	79,61%	78,53%	77,91%	76,36%	70,12%
2.	Financing Risk (NPF)	4,76%	3,26%	3,23%	3,13%	2,59%
3.	Operational risk (OER)	94,91%	89,18%	84,45%	85,55%	84,33%

Source: Indonesian OJK, Islamic Banking Statistics 2017-2021.

The financial risks at Indonesian ICBs in 2017-2021 presented in Table 2 include liquidity risk (FDR), financing risk (NPF), and operational risk (OER), indicating that the conditions and level of risk each year vary widely and tend to be unstable. This research aims to examine the impact of financial risk on the financial performance of Indonesian ICBs. This research is seen as an essential research alternative because, as indicated in Table 1, the financial performance of Indonesian ICBs 2017-2021 shows varying symptoms every year. In addition, every Indonesian ICBs faces different conditions and levels of financial risk, both in terms of liquidity risk/FDR (Ardana, 2018; Fatmawati & Hakim, 2020a), operational risk/OER (Mardiana, 2018; Dewi & Sudarsono, 2021a); and financing risk/NPF (Darma & Afandi, 2021).

Several researchers have carried out recent studies examining the effect of financial risk on the financial performance of Islamic banks in Indonesia. (Prasaja, 2018) reviewed the financial performance of Islamic banks in Indonesia for the 2014-2016 period. The results of his research stated that financing risk (NPF) had no significant adverse effect on the financial performance (ROA) of Islamic banks. In contrast, liquidity risk (FDR) and operational efficiency risk (OER) has a significant positive effect on the financial performance (ROA) of Islamic banks. Mardiana (2018) analyzed the effect of financial risk on the financial performance of Islamic banking in Indonesia from 2011-2016. The results of his research stated that financing risk (NPF) had no significant adverse effect on the financial performance (ROA) of Islamic banks.

In contrast, operational efficiency risk (OER) significantly adversely affects Islamic banks' financial performance (ROA). Ardana (2018) examining the external and internal factors that affected the profitability of Islamic banks in Indonesia from 2011-2018. The results of his research stated that financing risk (NPF) had a significant adverse effect on Islamic banks' profitability (ROA). In contrast, liquidity risk (FDR) and operational efficiency risk (OER) have a significant positive effect on the financial performance (ROA) of Islamic banks.

Fatmawati & Hakim (2020) analyzed the effect of financial risk on the profitability of Islamic banks in Indonesia from 2009 to 2018. The results of their research stated that liquidity risk (FDR) and operational efficiency risk (OER) had a significant negative impact on the profitability (ROA) of Islamic banks while financing risk (NPF) had no significant negative impact on the profitability (ROA) of Islamic banks. Dewi & Sudarsono (2021) analyzed the profitability (ROA) of Islamic banks in Indonesia using the Autoregressive Distributed Lag (ARDL) approach from January 2015 to July 2021. The results of their research stated that financing risk (NPF) had a significant negative impact on Islamic banks' profitability (ROA). In contrast, operational risk (OER) has no significant adverse effect on Islamic banks' profitability (ROA).

The recent research by Andini el al. (2022) who tested the effect of risk management on the profitability growth of Islamic banks in Indonesia for the 2018-2021 period, stated that financing risk (NPF) had a significant adverse effect on the financial performance (ROA) of Islamic banks, while operational risk (OER) had a significant positive effect on financial performance (ROA) Islamic banks. The research conducted by Riyadi et al. (2022) analyzed the capital and liquidity risk factors on the profitability of Islamic banks in Indonesia for the 2014-2019 period. The results of their research stated that the capital factor had a significant negative impact on the profitability (ROA) of Islamic banks. In contrast, liquidity risk (FDR) had no significant positive impact on Islamic banks' profitability (ROA). (Pujiyanty et al., 2022) who analyzed the profitability of Indonesian ICBs in 2015-2019, stated that liquidity risk (FDR) had a significant positive impact on ICBs profitability (ROA) because a high level of liquidity shows the health of a bank, and a healthy bank reflects that the bank can manage its capital correctly and increase its profitability.

Referring to several studies that examine the effect of financial risk on the financial performance of Islamic banks in Indonesia, as described above, the research results indicate that the impact of financial risk on financial performance could be more consistent. The following research gaps are found: First, several studies stated that liquidity risk (FDR) has a significant positive impact on the financial performance (ROA) of Islamic banks (Ardana, 2018; Fatmawati & Hakim, 2020; Prasaja, 2018; Pujiyanty et al., 2022). Meanwhile, the results of the latest research by Riyadi et al. (2022) stated that liquidity risk (FDR) did not have a significant positive impact on the profitability (ROA) of Islamic banks. Second, several recent studies stated that financing risk (NPF) has a significant negative impact on the financial performance (ROA) of Islamic banks (Ardana, 2018; Dewi & Sudarsono, 2021; Prasaja, 2018). Meanwhile, research conducted by Mardiana (2018) states that financing risk (NPF) has no significant negative impact on the financial performance (ROA) of Islamic banks. Third, several studies state that operational efficiency risk (OER) has a significant positive impact on the financial performance (ROA) of Islamic banks (Ardana, 2018; Prasaja, 2018). Meanwhile, several other researchers stated that operational efficiency risk (OER) has a significant negative impact on the financial performance (ROA) of Islamic banks (Mardiana, 2018; Dewi & Sudarsono, 2021).

This research aims to fill the existing gap by considering a moderating variable that can influence the relationship between financial risk and the financial performance of Islamic banks.

The research analyzes the moderating variable, namely bank size, to examine its influence on the relationship between financial risks (liquidity risk, financing risk, and operational efficiency risk) and the financial performance of Islamic banks in Indonesia. By testing the impact of the moderating variable, the research will explore whether it can explain the differences found in previous research. Through proper analysis, this research will test hypotheses and better understand how moderating variables, such as bank size, can influence the relationship between financial risk and financial performance in Islamic banks in Indonesia. Therefore, this research is expected to significantly contribute to filling the existing research gap and providing deeper insights into the factors that affect the financial performance of Islamic banks in Indonesia.

Furthermore, the difference between this research and several previous studies (Leong & Dollerym (2004); Aladwan (2015); and Alfadhli & Alali (2021)) lies in measuring bank size and its impact on the financial performance of Indonesian Islamic Commercial Banks (ICBs). The previous studies examined the impact of bank size on financial performance using different measures. In contrast, this study focuses on using total financing to measure bank size for Indonesian ICBs. Leong & Dollerym (2004) found that large banks in Singapore with relatively large asset sizes enjoyed economies of scale, resulting in lower overhead costs and more excellent financial performance than small banks. On the other hand, Aladwan (2015) tested the effect of bank size on Jordanian commercial banks and found that small and medium-sized banks had higher profitability (ROA) compared to large banks. In contrast, Alfadhli & Alali (2021) researched the effect of bank size on the financial performance of Islamic banks in Kuwait and found that the size of a bank's assets was inversely related to its profitability (ROA). These inconsistent findings highlight the controversial relationship between bank size and financial performance in Islamic banks. This study uses total financing to measure bank size in Indonesian ICBs. By examining the impact of bank size (measured by total financing) on the relationship between financial risk and financial performance, this research aims to provide further insights into whether bank size weakens or strengthens the effect of financial risk on the financial performance of Indonesian ICBs.

In line with the objectives of this research, the research questions (RQ) posed in this study are as follows:

RQ 1: What is the impact of liquidity risk (FDR) on the financial performance (ROA) of Indonesian ICBs?

RQ 2: What is the impact of efficiency risk (OER) on the financial performance (ROA) of Indonesian ICBs?

RQ 3: How does financing risk impact the financial performance of Indonesian ICBs?

RQ 4: What is the impact of bank size on the relationship between liquidity risk and financial performance in Indonesian ICBs?

RQ 5: What is the impact of bank size on the relationship between efficiency risk and financial performance in Indonesian ICBs?

The subsequent sections of this research paper consist of the literature review, hypothesis formulation, research methodology, results and discussion, and conclusion. The literature review will summarize relevant previous studies, aiming to comprehensively understand the variables involved, the relationships explored, and the divergent findings in prior research. Then, hypotheses will be formulated to address the research gaps, considering the moderating effect of bank size (total financing) on the relationship between financial risk (liquidity risk, financing risk, and operational efficiency risk) and the financial performance of Indonesian Islamic Commercial Banks (ICBs). The research methodology will be described, encompassing the research design, sample selection, data collection, and the statistical techniques employed to test the formulated hypotheses. Subsequently, the results and discussion section will present the findings, including the data analysis and interpretations, comparisons with previous studies, and the implications derived from the research findings. Finally, the conclusion section will summarize the research outcomes, link them to the formulated hypotheses, and provide overall conclusions and suggestions for further research based on the discussed findings.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Financial performance and management risk of Islamic banks in Indonesia

Financial performance provides an overview of the company's financial condition in a certain period, usually measured by profitability indicators. In the recent banking literature, ROA is the most critical profitability indicator to determine the financial performance of Islamic banks. ROA describes how the bank successfully uses its funds to generate profits as a percentage of each unit of assets. By evaluating ROA, Islamic banks can estimate future profit (Ateeq et al., 2021).. The financial performance of Islamic banks in Indonesia is generally measured using the profitability ratio of ROA, which shows the ability of banks to generate profits from the results of operating their assets in providing banking products and services by Islamic law (Ardana, 2018; Astuti, 2020; Prasaja, 2018).

To ensure the sustainability of their operations in providing banking products and services by Sharia principles or Islamic law, Indonesian Islamic Commercial Banks (ICBs) must strive to generate profitability and enhance their financial performance measured by Return on Assets (ROA) (Ardichy & Rahayu, 2022). Islamic banks need to pay attention to the variables that affect profitability so that their financial performance increases. Good financial performance will increase public confidence in saving funds, applying for financing, and making transactions with Islamic banks (Dewi & Sudarsono, 2021a).

Islamic banks face various risks as intermediary financial institutions that collect and channel funds from and to the community. In this case, Islamic bank management is required to be able to implement risk management that meets Sharia compliance and applicable regulations. The risk management principles applied to Islamic banks in Indonesia by the Indonesian OJK are

directed in line with the standard rules issued by the Islamic Financial Service Board/IFSB (Rustam, 2018). Indonesian OJK Regulation No. 65 /Pojk sets risk management arrangements for Indonesian Islamic banks.03/2016 concerning implementing Risk Management for Islamic Commercial Banks and Sharia Business Units. It is stated that risk management in Islamic banking includes financing, market, liquidity, operational, legal, reputation, strategic, compliance, rate of return, and equity investment risks.

Mardiana (2018), examining the impact of risk management on the financial performance of Islamic banking listed on the Indonesia Stock Exchange for the 2011-2016 period, states that the more effective the application of financial risk, the higher the financial performance of Islamic banks. In line with the results of research by Reyad et al. (2022), which examines the financial performance of Islamic Banks in the Gulf Cooperation Countries (GCG) for the 2013-2019 period states that one of the important determines of the financial performance of Islamic banks is financial risk, the more effective the implementation of financial risk, the higher the financial performance of Islamic banks.

Recent research by Falikhatun & Mutiarafah (2021) that examines management risk on the financial performance of Islamic banking in Indonesia for the 2015-2019 period recommends the importance of mitigating financial risk to maintain the reputation of Islamic banking and create innovative financing products to improve its financial performance.

2.2. The impact of liquidity risk on financial performance

Liquidity risk is an essential financial risk for Islamic banks in Indonesia. Liquidity risk according to Indonesian OJK Regulations No. 65/Pojk.03/2016 concerning Implementation of Risk Management for Sharia Commercial Banks and Sharia Business Units is a financial risk in which the bank is unable to fulfill its maturing obligations from cash flow funding sources or from high-quality liquid assets that can be used as collateral without disrupting activities and financial condition of the bank. The Financial generally measures liquidity risk in the Islamic banks to Deposit Ratio (FDR) indicator, which shows the level of financial liquidity in all financing activities provided with sources of funds received from third parties or public savings and deposits (Ardana, 2018; Fatmawati & Hakim, 2020; Prasaja, 2018; Pujiyanty et al., 2022).

Islamic banks are intermediary financial institutions. Based on the theory of financial intermediation, Islamic banks play an essential role in the development and improvement of economic activity due to their ability to create liquidity by collecting funds from the public through various deposit products and channeling them to the public as financing in the real economy sector, as well as being able to transform liquidity risk effectively and efficiently (Hosen et al., 2021). The research results by Hosen et al., (2021) stated that the liquidity creation of Indonesian Islamic banks in the 2011-2020 period has increased yearly. In addition, the capability of Indonesian Islamic banks to create liquidity from equity is stated to be in good condition. Every IDR 100 of equity can generate more than IDR 100 of liquidity.

Recent research conducted by previous researchers (Ardana, 2018; Fatmawati & Hakim, 2020; Prasaja, 2018), which examines the effect of liquidity on the financial performance of Islamic banks in Indonesia, stated that liquidity risk (FDR) has a significant positive impact on the

financial performance (ROA) of Islamic banks. (Pujiyanty et al., 2022) state that liquidity risk (FDR) has a positive and significant effect on financial performance (ROA) in Indonesian ICBs because a high level of liquidity reflects the soundness of a bank's financial condition and illustrates that banks can manage their funds appropriately and increase their profitability. The higher the FDR will increase its ability to generate profitability and improve the financial performance (ROA) of Indonesian ICBs. Based on the description above, the first hypothesis proposed in the study is as follows:

H1: Liquidity risk (FDR) has a significant positive impact on the financial performance (ROA) of Indonesian ICBs.

2.3. The impact of financing risk on financial performance

Financing risk is a significant indicator of business risk in the Indonesian Islamic Bank (Santoso, 2020; Darma & Afandi, 2021). Even though the channeling of funds to customers at Islamic banks uses a financing mechanism, however, in Indonesian OJK Regulation No. 65/Pojk.03/2016 Concerning the Implementation of Risk Management for Sharia Commercial Banks and Sharia Business Units, credit risk is used. This regulation states that credit risk is due to the failure of customers or other parties to fulfill their obligations to the BankBank under the agreed agreement, including credit risk due to debtor failure, credit concentration risk, counterparty credit risk, and settlement risk.

Financing risk is the risk caused by the customer's failure to fulfill his obligations to the BankBank at the maturity date of the financing received, which is generally measured using the Non-Performing Financing (NPF) is related to the Bank'sBank's ability to manage financing problem related to the Bank'sBank's ability to manage non-performing financing and to identify debtors or users of funds that fail to fulfill obligations to banks that have matured (Ardana, 2018; Dewi & Sudarsono, 2021; Prasaja, 2018). Current Research conducted by (Agustin & Darmawan, 2018) Santoso (2020), Dasari & Wirman (2020), and Darma & Anandi (2021) stated that financing risk (NPF) harms financial performance (ROA) of Islamic banks in Indonesia. NPF illustrates the ability of Islamic bank management to manage financing problems. The greater the NPF, the higher the financing risk the Bank faces and will reduce its profitability and financial performance/ROA (A. Santoso, 2020).. Based on the description above, the third hypothesis proposed in the study is as follows:

H2: Financing risk (NPF) has a significant negative impact on the financial performance (ROA) of Indonesian ICBs.

2.4. The impact of operational risk on financial performance

Operational risk is a crucial business risk indicator of Islamic banking. Operational risk of Islamic banks according to Indonesian OJK Regulation No. 65/Pojk.03/2016 concerning Implementation of Risk Management for Sharia Commercial Banks and Sharia Business Units is the risk of loss caused by inadequate internal processes resulting in internal process failures, system failures, human errors, or external events or factors that affect bank operations. Islamic

banks' operational risks can be divided into three categories: business risk, Sharia non-compliance risk, and legal risk (Zeineb & Mensi, 2018). First, business risk is the operational risk that is a consequence of various types of businesses, whether by Sharia principles or not, such as using asset-based financing whit murabahah, salam, istisna, and ijarah contacts. Second, Sharia non-compliance risk the risk of non-compliance with Sharia rules and principles in the business activities of Islamic banks. Third, legal risk, arises either as a result of illegal Sharia bank business operations or problems of legal uncertainty in interpreting and enforcing Islamic contracts. The Research focuses on the effect of operational risk on the financial performance of Indonesian ICBs concerning business risk.

The operational risk associated with business risk in Islamic banks is generally measured using the operational efficiency ratio (OER) indicator, which shows the effectiveness and efficiency of using operational costs to obtain operating income. Recent Research states that operational risk (OER) has a significant adverse effect on the financial performance (ROA) of Indonesian Islamic banks (Mardiana, 2018; Dewi & Sudarsono, 2021). Facing business operational risk requires Islamic bank management to manage operational risk (OER) using operational costs effectively and efficiently to generate maximum operating income. The smaller the operational risk (OER), the more effective and efficient Islamic banks manage costs to obtain operating income to improve their financial performance/ ROA (Agustin & Darmawan, 2018). Based on the description above, the third hypothesis proposed in the study is as follows:

H3: Operational risk (FDR) significantly negatively impacts the financial performance (ROA) of Indonesian ICBs.

<mark>2.5. Bank size as moderation</mark>

The financial performance of Islamic banks is not only determined by financial risk but also by the size of the Bank. The larger the size of the Bank, the more efficient its operational activities and the Bank's performance will increase. However, based on the current research results, it was found that the relationship between bank size and Islamic banks' financial performance (ROA) is not statistically significant (Alfadhli & Alali, 2021).

This study aims to address the existing research gap regarding bank size's impact on Islamic banks' financial performance. Specifically, it investigates the role of bank size as a moderator in the relationship between financial risk and the financial performance of Indonesian Islamic banks.

Then, the Theory of Economies of Scale was used to develop the hypothesis of bank size as a moderation of the effect of financial risk on financial performance (McGee, 2015). This theory explains that the management of sizeable economic scale organizations will become more effective and efficient only if the organization has developed innovative financial technology (Fintech) in its business operations, which can provide information for making the right decision to executives and managers in all the lines of the organizational structure; thereby enhancing the development of control techniques based on management accounting, budgeting, and cash flow analysis; as well

as making the company's products and services provided faster, easier, more effective, efficient, and convenient for its customers.

The theory of Economies of Scale (McGee, 2015) is used in this study because it is supported by the empirical results of several recent studies, which state that Islamic banks in Indonesia have developed financial technology (Fintech) based on modern information and communication technology in providing products and services.

Banking services, including digital banking services such as SMS and mobile banking via the Internet, have gained popularity among consumers, particularly millennials, in Indonesia (Riza, 2019; Anindyastri et al., 2022). The adoption of digital banking in delivering banking products and services has been well-received by customers of Islamic banks in the country.

Mobile banking services have positively impacted the financial performance of Indonesian Islamic banks (Anindyastri et al, 2022).

Based on the description above, the formulation of fourth, fifth, and sixth hypotheses regarding bank size as a moderation of the impact of financial risk on the financial performance of Islamic banks are formulated as follows:

H4: Bank size reduces a significant positive impact of liquidity risk (FDR) on the financial performance (ROA) of Indonesian ICBs.

H5: Bank size reduces a significant negative impact of financing risk (NPF) on the financial performance (ROA) of Indonesian ICBs.

H6: Bank size reduces a significant negative impact of operational efficiency risk (OER) on the financial performance (ROA) of Indonesian ICBs.

3. RESEARCH METHODOLOGY

3.1. Presentation of sample

Based on the Law of the Republic of Indonesia No. 21 of 2008 concerning Islamic Banking, It is stated that Islamic banks are banks that carry out business activities based on Sharia principles or Islamic law. This study's population of Islamic banks are all Islamic Commercial Banks (ICBs) operating in Indonesia. ICBs is a bank that conducts business activities based on Sharia principles and, in its activities, provides services in payment traffic. The ICBs research sample was selected purposively with the following criteria: First, ICBs have been registered with the Financial Services Authority (Otoritas Jasa Keuangan/ OJK). Second, ICBs publish annual reports containing complete information related to the research variables observed during 2017-2021. Based on the criteria, the research sample is presented in Table 2.

Table 2. Research Sample

No	Criteria	2017	2018	2019	2020	2021	Analysis Units

No		13	14	14	14	12	67
1.	ICBs registered with Indonesian OJK for the 2017-2021 period.	13	14	14	14	12	67
2.	ICBs do not publish financial reports and annual reports containing complete information regarding research variables.	(1)	(2)	(1)	(1)	(2)	(7)
	Number of Unit Analysis	12	12	13	13	10	60

3.2. Data, operational definitions, and variables measurements

This study uses secondary data obtained from annual reports of all ICBs in Indonesia for five periods from 2017 to 2021. The data collected includes all research variables, including financial performance, liquidity risk, operational risk, financing risk, and bank size. The operational definition and measurement of variables are based on Indonesian OJK Regulations No. 65 /Pojk.03/2016 concerning Implementation of Risk Management for Islamic Commercial Banks and Islamic Business Units, Indonesian OJK Regulation No. 8/POJK.03/2014 concerning Assessment of Soundness Level of Islamic Commercial Banks and Islamic Business Units, Indonesia OJK Circular Letter No. 10/SEOJK.03/2014 concerning the Assessment of the Soundness Level of Islamic Commercial Banks and Islamic Business Units and its implementation in several recent studies (Agustin & Darmawan, 2018; Darma & Afandi, 2021; Dasari & Wirman, 2020; Pujiyanty et al., 2022; A. Santoso, 2020). The operational definition and measurement of variables in this Research are presented in Table 3 as follows.

Table 3. Operational Definition and Measurement of Research Variables

No	Research Variables	Operational definition	Measurements
1.	Financial Performance	The ability of a bank to obtain profit from its business activities with all its assets is measured by the profitability level of Return on Assets (ROA).	ROA = Profit Before Tax / Total Assets.
2.	Liquidity Risk	The Bank's risk arises from the inability to meet maturing obligations from cash flow funding sources from third-party funds used to fund financing, as measured by the Financing to Deposit Ratio (FDR).	FDR = Total Financing / Third Party Funds x 100%.

3.	Financing Risk	The Bank's risk due to customer failure to meet returns on financing received and past due, as measured by Non-Performing Financing (NPF).	NPF = Problem Financing / Total Financing x 100%.
4.	Operational Risk	The Bank's risk describes the level of efficiency in controlling operational costs in carrying out its business activities to obtain operating income, which is measured using the Operating Efficiency Ratio (OER).	OER = Operating Cost / Operating Income x 100%
5.	Bank Size	Bank size shows the scale of the bank as measured by the total amount of financing distributed to customers *using mudharabah, musyarakah, murabahah, istishna, ijarah,* and *qardh* contracts.	Bank Size = $\sum$ Total Financing.

3.3. Research Model

Based on literature review the proposed research model is presented in Figure 1, the model shows the impacts of liquidity risk (FDR), financing risk (NPF) operational risk (OER) on financial performance (ROA) of Indonesian ICBs. This model includes testing bank size (total financing) as a moderating variable for the influence of the impacts of liquidity risk (FDR), financing risk (NPF) and operational risk (OER) on financial performance (ROA) of Indonesian ICBs.
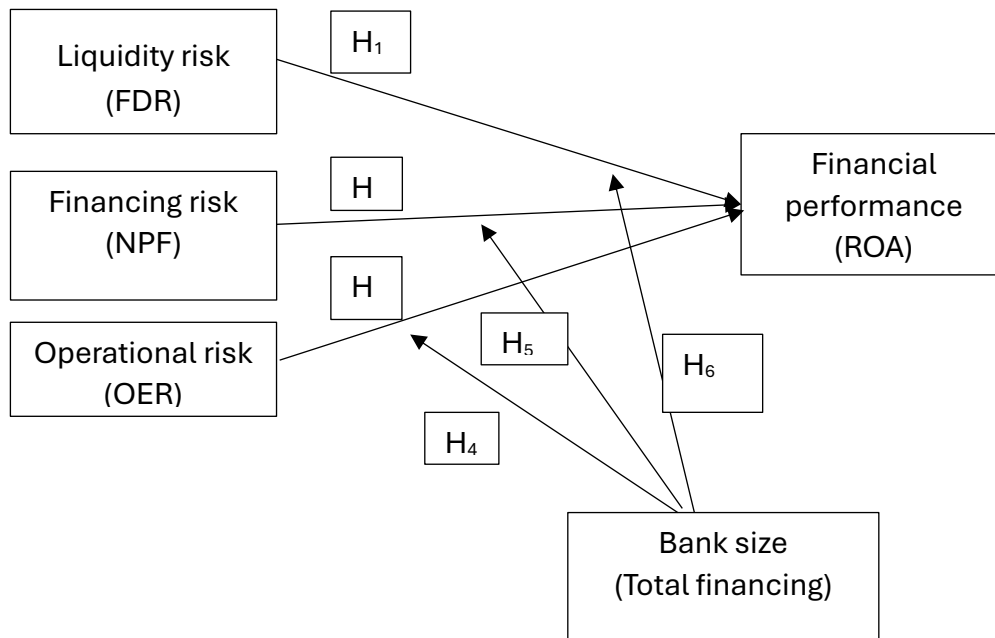
Figure 1. Research Model

3.3. Data analysis and hypothesis testing

Data analysis in this study used descriptive statistical analysis and panel data regression analysis. Descriptive statistical analysis was used to describe the profile of individual research variables and the observed variable data regarding the mean, standard deviation, variance, maximum, and minimum values (Ghozali, 2016).

Two-panel data regression models are used in this study to test the hypotheses, namely the Multiple Regression Panel Data Model and the Moderated Regression Panel Data Model. The independent regression panel data model is used to test the hypothesis of the effect of the independent variables, namely liquidity risk (FDR), financing risk (NPF), and operational risk (OER), on the dependent variable financial performance (ROA) of Indonesia ICBs it used the Multiple Regression Data Panel Equation as follows:

$ROA_{(it)} = \alpha + \beta 1 FDR_{it} + \beta 2 NPF_{it} + \beta 3 OER_{it} + e_{it}$. (Equation 1).

Where ROA: Return on Assets (financial performance); FDR: Financing to Deposit Ratio (liquidity risk); NPF: Non-Performing Financing (financing risk); OER: Operational Efficiency Ratio (operational risk); i: Data cross section (Bank); t: Data time series (year).

The moderating regression analysis is used to test the effect of the moderating variable on bank size and whether it strengthens or weakens the relationship between the independent variables of liquidity risk (FDR), financing risk (NPF), and operational risk (OER) on the dependent variable of financial performance (ROA) of Indonesian ICBs. Moderated Regression Analysis (MRA) is used with the equation:

$ROA_i t = \alpha + \beta 1 \ FDR*SIZE_{it} + \beta 2 \ NPF*SIZE_{it} + \beta 3 \ OER*SIZE_{it} + e_{it}$. (Equation 2).

Where FDR*SIZE: FDR interaction with Bank Size; NPF*SIZE: NPF interaction with Bank Size; OER*SIZE: OER interaction with Bank Size.

Furthermore, to test the independent and the moderation hypothesis is used a partial test (t test) is with the decisions: If the probability value (p) ≤ α=0.05, the independent variables and moderating variables have no significant effect, and vice versa.

4. RESULT AND DISCUSSION

4.1. Results of descriptive statistical analysis

The variables observed in this study include financial performance (ROA), liquidity risk (FDR), financing risk (NPF), operational risk (OER), and bank size (SIZE). The descriptive statistical analysis results are presented in the following table based on the research variables mentioned above.

Table 4. Descriptive Statistical Variables

Variable	Descriptive Statistics			
	Mean	Maksimum	Minimum	Standard Deviation
ROA	0.012593	0.135800	-0.101000	0.037427
FDR	0.842978	1.967300	0.384900	0.189764
NPF	0.036557	0.221400	0.003200	0.034811
OER	0.942730	2.174000	0.575500	0.276656
SIZE	29.83549	32.03420	27.41450	1.049801

Referring to the variable descriptive statistics presented in Table 4, a detailed description of the research variables follows.

6) The average financial performance (ROA) of Indonesian ICBs is 0.012593 (1.26%). According to Indonesian OJK regulations, a healthy bank's financial performance standard is ROA $\geq$ 1.50%. Thus, in general, the financial performance (ROA) of Indonesian ICBs does not include healthy banks. Standard Deviation ROA=0.37427 > Mean ROA=0.012593 shows that the financial performance of Indonesian ICBs varies widely, where the highest is 13.58%, and the lowest is -10.10%.

7) The average liquidity risk (FDR) of Indonesian ICBs is 0.842978 (84.3%). According to Indonesian OJK regulations, a healthy bank's liquidity risk standard is 80%<FDR<110%. Indonesian ICBs are categorized as healthy banks. In addition, Standard Deviation FDR=0.189764 < Mean FDR =0.842978 shows that the FDR variation is relatively small.

8) The financing risk (NPF) of Indonesian ICBs is 0.036557 (3.66%). According to Indonesian OJK regulations, a healthy bank's financing risk standard is NPF<5%. Shows that judging from its financing risk, Indonesia ICBs is categorized as a healthy bank. However, the Standard Deviation NPF= 0.034811 > Mean NPF= 0.036557 indicates that the variation of NPF among Indonesian ICBs is considerable, where the largest NPF is 22.1%, and the smallest NPF is 0.32%.

9) Operational risk (OER) of Indonesian CBIs shows an average of 0.942730 (94.27%) when compared to the standard operational risk of the banking industry, which is categorized as

healthy banks is 85%≤OER≤94%. Judging from its operational risk, generally of Indonesian ICBs are categorized as healthy banks. Seen from the Standard Deviation OER=0.276656 < Mean OER=0.942730 shows that the variation in operational risk among Indonesian ICBs is relatively small.

10) The bank size (SIZE) of Indonesian CBIs shows Standard Deviation SIZE=1.049801 < Mean SIZE=29.83549, indicating that the variation in bank size among Indonesian CBIS is relatively small.

4.2. Hypothesis testing results

4.2.1. The results of independent hypothesis testing

Determining the appropriate regression panel data model for hypothesis testing the effect of financial risk on the financial performance of Indonesian ICBs is very important. To obtain a regression panel data model that is feasible for the independent hypothesis testing concerning the effects of liquidity risk (FDR), financing risk (NPF), and risk operational (OER) on financial performance (ROA) of Indonesia ICBs, are used approach of the common-effect model, fixed effect model, and random effect model. The estimation results of the feasibility of the regression panel data model are presented in Table 5. Referring to Table 5, the fixed effect model is suitable for hypothesis testing because the independent variables can explain the dependent variable by 96%, which is the highest compared to other models. Furthermore, the model is tested with the Chow Test and Hausman Test to ensure that the Regression Panel Data Fixed Effect Model is the most appropriate for testing hypotheses based on data characteristics.

Table 5. Estimation Results of Regression Panel Data Model

Estimation Test	Adjusted R-squared	Results
Common Effect Model	0.665502	Independent variables can explain the dependent variable by 66%, and other variables explain the remaining 34%.
Fixed Effect Model	0.968847	Independent variables can explain the dependent variable by 96%, and other variables explain the remaining 4%.
Random Effect Model	0.860683	Independent variables can explain the dependent variable by 86%, and other variables explain the remaining 14%

The results of testing the model using the Chow and Hausman Tests are presented in Table 6.

Table 6. Multiple Regression Panel Data Model Fitment Test

Chow Test			
Effect Test	Statistics	d.f.	Prob.
Cross-section F	46.440985	(12.44)	0.0000
Cros-section Chi-Sq	156.893444	12	0.0000

Test Result:

 Ho: Command effect model; H1: Fixed effect model.

Prob. $0.0000 < \alpha = 0.05$, the most appropriate Multiple Regression Panel Data Model for testing the independent hypotheses is the Fixed Effects Model.

Hausman Test			
Test Summary	Chi-Sq. Statistics	d.f. Chi-Sq.	Prob.
Cross-section random	7.847454	3	0.0493

Test result:

Ho: Random Effect Model, H_1: Fixed Effect Model.

Prob. $0.0000 < \alpha = 0.05$, the most appropriate Multiple Regression Panel Data Model for testing the hypothesis independent is the Fixed Effect Model.

Referring to Table 6, both tested using the Chow Test and the Hausman Test, it is known that the Multiple Regression Panel Data Model, suitable for testing the independent hypothesis of the effect of financial risk on financial performance at Indonesian ICBs, is a fixed effect model. Then the results of the independent hypothesis testing of the effect of financial risk, including

liquidity risk (FDR), Financing risk (NPF), and operational risk (OER) on financial performance (ROA) of Indonesian ICBs using the fixed effect model are presented in the table as follows.

Table 7. The Results of Independet Hyphotesis Testing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.089555	0.006740	13.28721	0.0000
FDR	-0.001562	0.005936	-0.263109	0.7937
NPF	-0.161573	0.036624	-4.411611	0.0001
OER	-0.073976	0.004787	-15.45442	0.0000

Effects Specification				
Cross-section fixed (dummy variables)				

R-squared	0.976767	Mean dependent var		0.012593
Adjusted R-squared	0.968847	S.D. dependent var		0.037427
S.E. of regression	0.006606	Akaike info criterion		-6.978529
Sum squared resid	0.001920	Schwarz criterion		-6.420037
Log likelihood	225.3559	Hannan-Quinn criter.		-6.760072
F-statistic	123.3262	Durbin-Watson stat		2.594497
Prob(F-statistic)	0.000000			

Referring to Table 6, both tested using the Chow Test and the Hausman Test, it is known that the Multiple Regression Panel Data Model, suitable for testing the independent hypothesis of the effect of financial risk on financial performance at Indonesian ICBs, is a fixed effect model. Then the results of the independent hypothesis testing of the effect of financial risk, including liquidity risk (FDR), Financing risk (NPF), and operational risk (OER) on financial performance (ROA) of Indonesian ICBs using the fixed effect model are presented in the table as follows.

Referring to Table 7 obtained the multiple regression equation for testing the hypothesis independent of the effect of liquidity risk (FDR), financing risk (NPF), and operational risk (OER) on financial performance (ROA) in Indonesian ICBs as follows:

ROA = 0.089555 - 0.001562FDR - 0.161573NPF - 0.073976OER + e.

Based on the multiple regression equation mentioned above, the results obtained from testing the hypothesis regarding the effect of financial risk (liquidity risk, financing risk, and operational risk) on financial performance in Indonesian ICBs are presented in Table 8 as follows.

Table 8. Summary of Independent Hypothesis Testing

Hypothesis	Coefficients	Prob.	Conclusion
H_1: Liquidity risk (FDR) has a significant positive impact on the	-0.001562	0.7937	Rejected

financial performance (ROA) of Indonesian ICBs.			
H$_2$: Financing risk (NPF) has a significant negative impact on the financial performance (ROA) of Indonesian ICBs.	-0.161573	0.0001	Accepted
H$_3$: Operational risk (FDR) significantly negatively impacts the financial performance (ROA) of Indonesian ICBs.	-0.73976	0.0000	Accepted

4.3.3. The results of moderation hypothesis testing

In addition to examining the effect of financial risk on financial performance, this study also presents a variable bank size as a moderator of the effect of financial risk on financial performance. Then to get the most appropriate moderated regression panel data model used to test the bank size as a moderated of the effect of financial risk on the financial performance of Indonesian ICBs, use the Chow test approach, Houseman and Langrage Multiplier (LM), the results of this testing are presented in Table 10.

Table 10. Moderated Regression Panel Data Model Fitment Test

Chow Test			
Effect Test	Statistics	d.f.	Prob.
Cross-section F	47.831434	(12.44)	0.0000
Cros-section Chi-Sq	158.535716	12	0.0000
Test result: Ho: Command effect model; H1: Fixed effect model. **Prob. 0.0000 < α = 0.05, the most suitable Multiple Regression Panel Data Model for testing independent hypothesis is the Fixed Effects Model.**			
Hausman Test			
Test Summary	Chi-Sq. Statistics	d.f. Chi-Sq.	Prob.
Cross-section random			
	6.861540	3	0.0764
Test result: Ho: Random Effect Model, H$_1$: Fixed Effect Model. **Prob. 0.0000 < α = 0.05, the most suitable Multiple Regression Panel Data Model for testing independent hypothesis is the Random Effect Model.**			
Lagrange Multiplier (LM) Test			
	Cross-section	Time	Both
	75.405704	0.931219	76.38826

Breusch-Pagan	(0.0000)	(0.3345)	(0.000)	

Test Resullt: Ho: Random Effect Model, H_1: Fixed Effect Model.
The probability value of the Breusch-Pagan Cross-section is 0.0000 <α=0.05,
the most suitable Multiple Regression Panel Data Model for testing moderation
hypothesis is the Fixed Effects Model.

Referring to Table 10, both tested using the Chow Test and Lagrange Multiplier (LM) Test, it is known that the Moderated Regression Panel Data Model, which is suitable for testing the moderation hypothesis of bank size of the effect of financial risk on the financial performance of Indonesian ICBs is the Fixed Effects Model. Then the results of testing the moderation hypothesis showed the bank reduced the effects of financial risk, including liquidity risk (FDR), financing risk (NPF), and operational risk (OER) on financial performance (ROA) of Indonesian ICBs using the fixed effect model are presented in Table 11 as follows.

Table 11. The Results of Moderated Hyphotesis Testing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.090229	0.008475	10.64599	0.0000
FDR_SIZE	-9.85E-06	0.000198	-0.049849	0.9604
NPF_SIZE	-0.005616	0.001220	-4.602622	0.0000
OER_SIZE	-0.002552	0.000159	-16.07069	0.0000

Effects Specification				
			S.D.	Rho

Cross-section random			0.019060	0.8956
Idiosyncratic random			0.006507	0.1044

Weighted Statistics				
R-squared	0.873005	Mean dependent var		0.001977
Adjusted R-squared	0.866201	S.D. dependent var		0.018328
S.E. of regression	0.006704	Sum squared resid		0.002517
F-statistic	128.3202	Durbin-Watson stat		1.958681
Prob(F-statistic)	0.000000			

Unweighted Statistics				
R-squared	0.633740	Mean dependent var		0.012593
Sum squared resid	0.030270	Durbin-Watson stat		0.162846

Based on Table 11, the moderated regression panel data equation is obtained with the following formulation:

ROA= 0.090229-9.85E-06FDR*SIZE-0.005616NPF*SIZE-0.002552OER*SIZE+e

Then, hypothesis testing results of bank size as a moderation of the effects of financial risks on the financial performance of Indonesian ICBs is presented in Table 12.

Table 12. Summary of Moderated Hypothesis Testing

Hypothesis	Coeeficient	Prob.	Conclusion
H$_4$: Bank size reduces a significant positive impact of liquidity risk (FDR) on the financial performance (ROA) of Indonesian ICBs.	-0.985E-06	0.9604	Rejected
H$_5$: Bank size reduces a significant negative impact of financing risk (NPF) on the financial performance (ROA) of Indonesian ICBs.	-0.005616	0.0000	Accepted
H$_6$: Bank size reduces a significant negative impact of operational efficiency risk (OER) on the financial performance (ROA) of Indonesian ICBs.	-0.002552	0.0000	Accepted

4.3. Discussion

The discussion section of this Research, it describes the identification and analysis of the effect of financial risk, which includes liquidity risk (FDR), financing risk (NPF), and operational risk (OER) on the financial performance (ROA) of Indonesian ICBs. In addition, it also describes the identification and analysis of bank size as moderating the effect of liquidity risk (FDR), financing risk (NPF), and operational risk (OER) on the financial performance (ROA) of Indonesian ICBs.

4.3.1. Liquidity risk (FDR) on financial performance (ROA)

The results of this study state that the hypothesis proposed in H1: Liquidity risk (FDR) harms financial performance (ROA) on Indonesian ICBs was rejected. The results of this study contrast with several recent studies that state that liquidity risk (FDR) has a significant positive effect on the (Agustin & Darmawan, 2018)) of Islamic banks (Agustin & Darmawan, 2018; Darma & Afandi, 2021; Pujiyanty et al., 2022).

Based on the results of the descriptive statistical analysis, it is known that the average (mean) value of liquidity risk in Indonesian ICBs is FDR=0.842978 (84.29%), still included in the category of standard liquidity risk for healthy banks 80%≤FDR≤100%. However, liquidity risk (FDR) has no significant positive effect on the financial performance (ROA) of Indonesian ICBs. The results of this study contradict the findings of the current study by Reyad et al. (2022), which states that if liquidity risk is under the regulation of healthy bank liquidity standards, the higher the financial performance of Islamic Banks.

The results of this study show that the mean FDR in Indonesian ICBs is 84.29%. This indicates that funds collected from third parties (public savings) have yet to be channeled optimally into financing to improve their financial performance (ROA). This study's findings differ from the results of recent Research by Ben Zeineb & Mensi (2018) state that good corporate governance in Islamic banking tends to encourage executive managers to take significant liquidity risks to improve their financial performance (ROA). It was explained that the greater the third-party funds invested in financing would indeed increase liquidity risk (FDR). However, if the financing risk (NPF) can be appropriately managed, Islamic banks' financial performance (ROA) will increase. The results of this study indicate that financing risk (NPF) in Indonesian ICBs cannot be adequately managed.

4.3.2. Financing risk on financial performance

Financing risk is the most critical management risk in Islamic and conventional banking (Rinawati & Santoso, 2019, and Darma & Afandi, 2021). The results of this study stated that financing risk (NPF) had a significant negative impact on the financial performance (ROA) of Indonesian ICBs, so the second hypothesis (H2) proposed in this study was accepted. The results of this study are in line with several recent studies which state that financing risk (NPF) has a significant adverse effect on the financial performance (ROA) of Islamic banks (Agustin & Darmawan, 2018; Darma & Afandi, 2021; Dasari & Wirman, 2020; A. L. Santoso et al., 2023).

The descriptive statistical analysis shows that the mean financing risk (NPF) for Indonesian ICBs is NPF=0.036557 (3.66%). According to Indonesia OJK Regulation No. 8/POJK.03/2014 the NPF standard for healthy Bank is NPF ≤ 5%.   Judging from the magnitude of the financing risk on ICBs in Indonesia in the 2017-2021 period is NPF=3.66% < NPF standard of healthy bank industry is NPF≤ 5%, this result of the study stated that the Indonesian ICBs are included in the healthy banks categories.

4.3.3. Operational risk on financial performance

Operational risk is the risk of loss caused by inadequate internal processes resulting in system failure, human error, and external events that have a negative impact on bank operations. This study states that operational risk (OER) has a significant negative effect on the financial performance (ROA) of Indonesian ICBs, so the third hypothesis (H3) proposed in this study is accepted. The results of this study support recent Research which states that operational risk has a negative effect on financial performance of Islamic banks (Agustin & Darmawan, 2018; Darma & Afandi, 2021; Fatmawati & Hakim, 2020; Hanafia & Karim, 2020).

Referring to the descriptive statistical analysis results, Indonesian ICBs have a Mean Operational Risk (OER) of 0.942730 (94.27%). According to standard operating risk regulations for the banking industry, which is categorized as a healthy bank with an operational risk of 85% ≤ OER ≤ 94% (OJK Regulation No. 8/POJK.03/2014). The results of this study indicate that Indonesian ICBs are in the healthy bank category because their OER is 0.27% greater than the industry standard OER of a bank that is truly categorized as a healthy bank. (Agustin & Darmawan,

2018) stated that the greater the operational risk (OER), the more inefficient the Bank is because the operational costs are more significant than the operating income.

Islamic banks have different characteristics of assets and liabilities compared to conventional banks, so the operational risks faced by Islamic banks are also different from conventional banks (Aldoseri & Worthington, 2016). Islamic banks are more susceptible to operational risks and risks of non-compliant sharia, while conventional banks are more vulnerable to credit risk and bankruptcy risk (Elgharbawy, 2020).. Facing operational risks requires Islamic banks to manage costs efficiently and cost benefits to generate income. However, considering that the level of operational risk in Indonesian ICBs is OER=94.27% which is still relatively higher than the standard operational risk in the banking industry, which is categorized as a healthy bank, which is $85\% \leq OER \leq 94\%$, it is recommended that operational risk management in Indonesian ICBs be carried more effectively and efficiently so that operational costs are utilized optimally to obtain maximum income within the framework of improving its financial performance.

4.3.4. Bank size as moderation effect financial risk on financial performance

Bank size (SIZE) in this study is measured by the amount of financing, either through a profit-sharing-based financing mechanism with *Mudarabah* and *Musyarakah* contracts, a sales-based financing mechanism with *Murabaha* and *Istishna* contracts, a financing mechanism based on lease with Ijarah contract, as well as a non-commercial financing mechanism with al-*qordh* contracts. The type of financing mechanism carries unique characteristics of liquidity risk (FDR), financing risk (NPF), and operational risk (OER) and their effects on financial performance (ROA) among Indonesian ICBs.

The results of testing the moderation hypothesis proposed in the fourth hypothesis (H4), that bank size reduces the negative effect of liquidity risk (FDR) on the financial performance (ROA) of Indonesian ICBs, is rejected. Shows that bank size depends on total financing and cannot reduce the negative impact of liquidity risk on financial performance. This study shows that bank size has no significant impact on financial risk and financial performance in Islamic banks, both large and small. Therefore, the ability of Indonesian ICBs to manage and control liquidity risk needs to be improved by prioritizing third-party funds to be invested in profitable financing to improve their financial performance.

Then related to the fifth hypothesis (H5), bank size reduces the negative effect of financial risk (NPF) on the financial performance (ROA) of Indonesia ICBs, is accepted. The results of this study support recent Research, which states that increasing the amount of financing carried out by Islamic banks is followed by appropriate, effective, and efficient financing risk management to improve their financial performance. It shows that ICBs Indonesia's financing risk management has been carried out optimally by considering the size of their financing and the type of risk in each financing mechanism, namely through *mudharabah* and *musyarakah* profit sharing financing, *murabahah* and *istishna* sales financing, *ijarah* lease financing, *al-qard* non-commercial financing, and other appropriate and profitable financing mechanisms to improve its financial performance. Based on the Theory of Economies Scale (McGee, 2015), the results of this study

indicate that financing risk management at Indonesia ICBs has been supported by innovative Fintech, which makes it possible to oversee and decide on the determination and implementation of profitable financing mechanisms, and to eliminate problematic financing such as non-current financing, doubtful financing, and bad financing, to improve its financial performance.

Finally, regarding the sixth hypothesis (H6), bank size reduces the negative impact of operational risk (NPF) on the financial performance (ROA) of Indonesian ICBs, which is accepted. The results of this study support recent research which states that Islamic banks in Indonesia have developed innovative financial technology (Fintech) in providing banking products and services, such as digital banking services (Riza, 2019). Based on the Theory of Economies of Scale (McGee, 2015), the results of this study indicate that innovative financial technology developed in providing banking products and services at Indonesian ICBs has succeeded in supporting operational risk management in a proper, effective, and efficient manner. Large and even small-scale ICBs can utilize operational costs more efficiently to obtain optimal operating income. It is recommended that future researchers examine and analyze the extent to which Fintech supports the implementation of risk management of Indonesian Islamic banks to improve their performance, both financial performance and Islamic performance.

5. CONCLUSION

This study examines the impact of financial risk on the financial performance of Indonesian ICBs with bank size as a moderator. The research findings stated that liquidity risk does not significantly impact the financial performance of ICBs. In contrast, financing risk and operational risk have a significant negative impact on their financial performance. Furthermore, the study reveals that bank size does not reduce the negative impact of liquidity risk on financial performance. However, it mitigates the negative impact of financing and operational risks on financial performance. The results suggest that effective management and control of financing risk and operational risk, along with considerations of bank size, can enhance the financial performance of Indonesian ICBs. The findings contribute to a better understanding the relationship between financial risk, bank size, and financial performance in Islamic banking. Future Research could broaden the scope to include a broader range of Islamic banking institutions and more extended observation periods to gain a more comprehensive understanding.

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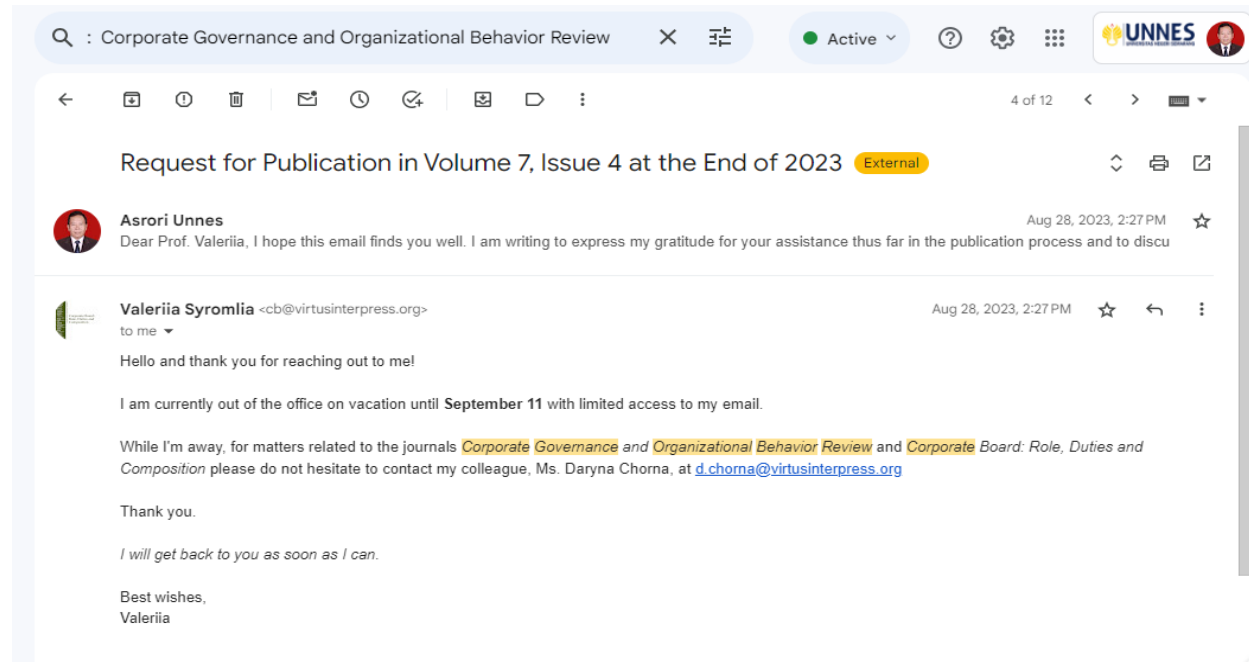
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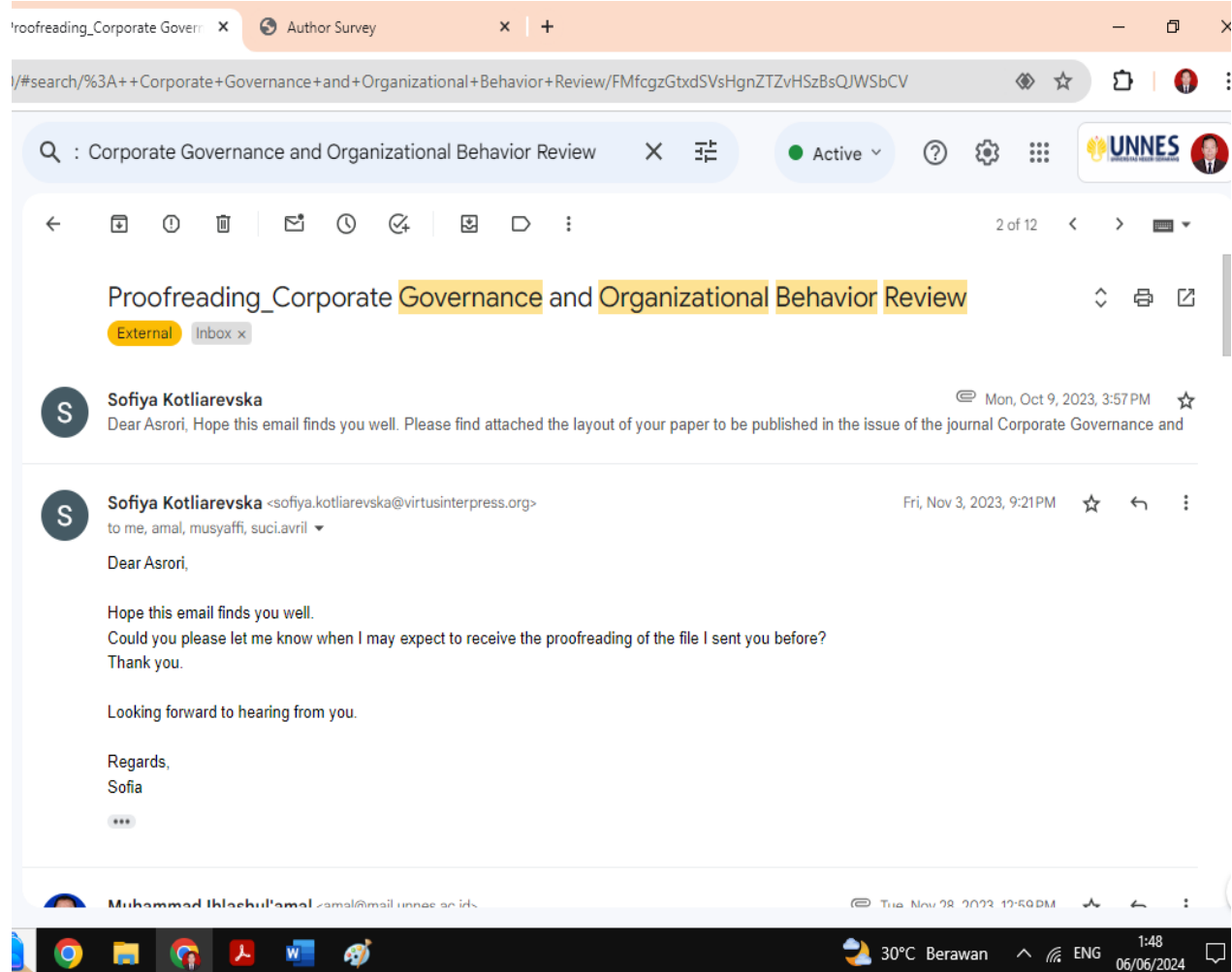
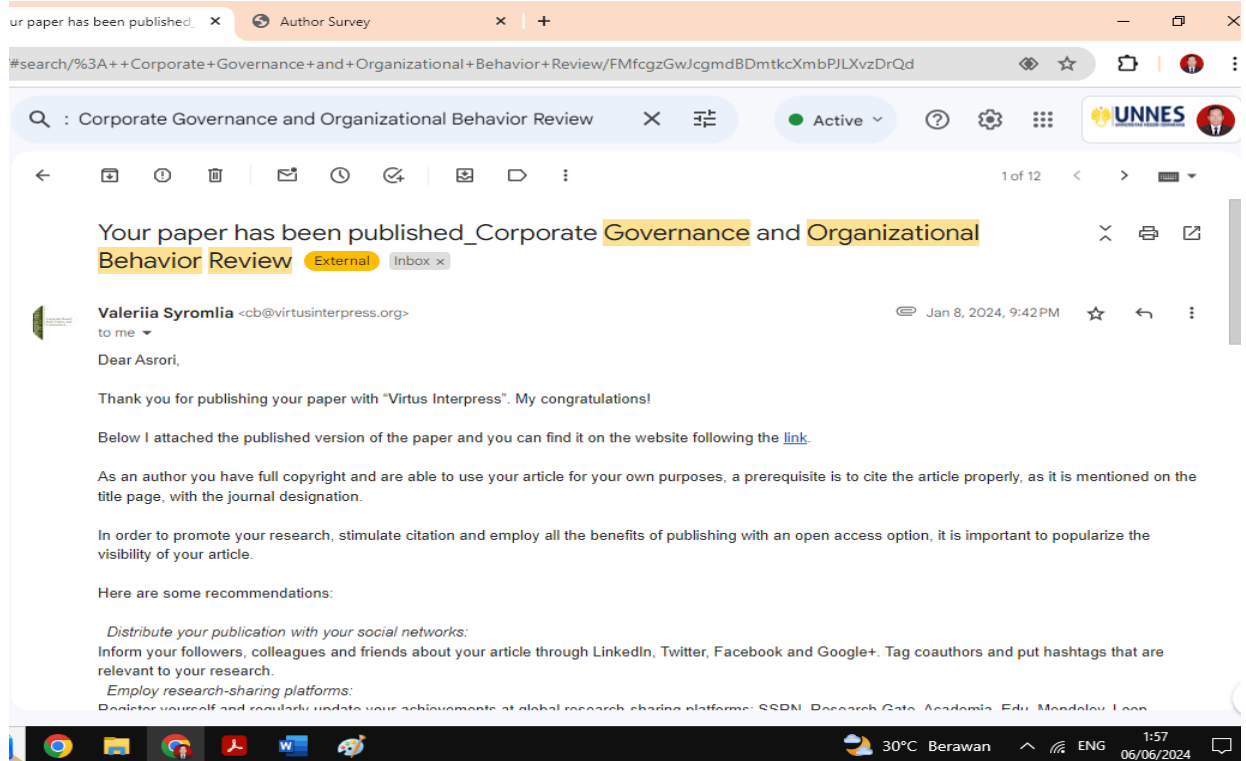Dear Asrori,

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EXAMINING THE MODERATING EFFECT OF BANK SIZE ON THE FINANCIAL RISK AND PERFORMANCE LINKAGE OF ISLAMIC COMMERCIAL BANKS

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Abstract

Financial performance is very important for Islamic banks to ensure the sustainability of their business in providing banking products and services according to Sharia principles or Islamic law. This research examines the impact of financial risk on the financial performance of Indonesian Islamic commercial banks (ICBs), with bank size as a moderating variable. The research was conducted on all Indonesian ICBs from 2017–2021. Fixed effects models are employed to account for potential heterogeneity across banks and control for time-invariant unobserved factors. These models allow for estimating the within-bank variation over time, capturing constant bank-specific characteristics over the study period. The results of this research state that financing and operational risks significantly negatively impact financial performance. In contrast, liquidity risk does not significantly negatively impact financial performance. Furthermore, from testing the moderation hypothesis, the results of this study state that total financing reduces the significant negative effect of financing risk and operational risk on ICB Indonesia's financial performance. However, total financing does not reduce the significant negative effect of liquidity risk on the financial performance of Indonesian ICBs.

Keywords: Financial Risk, Financial Performance, Bank Size, Islamic Commercial Bank

Authors' individual contribution: Conceptualization — A. and A.M.M.; Methodology — A., M.I., A.M.M., and N.P.R.; Validation — M.I. and N.P.R.; Formal Analysis — A.; Investigation — A. and M.I.; Resources — M.P.R.; Data Curation — A. and N.P.R.; Writing — Original Draft — A. and N.P.R.; Writing — Review & Editing — M.I., A.M.M., S.A.U., and N.P.R.; Supervision — A. and S.A.U.; Project Administration — N.P.R.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

EXAMINING THE MODERATING EFFECT OF BANK SIZE ON THE FINANCIAL RISK AND PERFORMANCE LINKAGE OF ISLAMIC COMMERCIAL BANKS

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Abstract

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1. INTRODUCTION

Islamic commercial banks (ICBs) are Islamic banks that provide services in payment traffic. ICBs has been operating in Indonesia since the establishment of Bank Muamalat Indonesia (BMI) in 1992 as the first Islamic bank. In its development at the end of 2022 in Indonesia, there are 13 ICBs supported by total assets of IDR520.89 billion. The financial performance of Islamic banks can be seen from

the profitability ratio return on assets (ROA), which describes their performance in achieving profits by managing their total assets (Fatmawati & Hakim, 2020). The main business activity of ICBs is to collect and distribute funds to the public using Sharia principles, which do not contain usury, uncertainty, gambling, tyranny, and other unlawful elements prohibited in Islamic law (Estiawan & Asrori, 2021). The role of ICBs in Indonesia is crucial, in line with its potential as a country with the largest Muslim population in the world. Based on data from the Central Statistics Agency (*Badan Pusat Statistik* — BPS) for 2022, it is stated that Indonesia's population at the end of 2022 will be 277.75 million people, of which 241.7 million people (87%) are Muslims.

Indonesian ICBs' financial performance (ROA) for five years (2017-2021) refers to Sharia Banking Statistics from the Indonesian Financial Services Authority (*Otoritas Jasa Keuangan* [OJK], 2022), namely 0.6% in 2017, 1.28% in 2018, 1.73% in 2019, 1.40% in 2020, and 2.05% in 2021. The achievement of financial performance at ICBs Indonesia 2017-2021 varies greatly each year, which is an interesting phenomenon to identify and analyze what factors cause it. Recent research that examined the financial performance of conventional and Islamic banks in Indonesia for the 2012-2016 period, stated that the financial performance of Indonesian banks was determined by financial risk (Saiful & Ayu, 2019). Referring to the Sharia Banking Statistics published by OJK (2022), it is stated that the financial risks of Indonesian ICBs for five years from 2017 to 2021 including liquidity risk (financing to deposit ratio — FDR) are 79.61% in 2017, 78.53% in 2018, 77.91% in 2019, 76.36% in 2020, and 70.12% in 2021. Financing risk (non-performing financing — NPF) was 4.76% in 2017, 3.26% in 2018, 3.23% in 2019, 3.13% in 2020, and 2.59% in 2021. Operational risk (operating expense ratio — OER) was 94.91% in 2017, 89.18% in 2018, 84.45% in 2019, 85.55% in 2020, and 84.33% in 2021.

The financial risks at Indonesian ICBs in 2017-2021 indicate that the conditions and level of financial risk each year vary widely and tend to be unstable. This research aims to examine the impact of financial risk on the financial performance of Indonesian ICBs. This research is seen as an essential research alternative because the financial performance of Indonesian ICBs for 2017-2021 shows varying symptoms every year. In addition, every Indonesian ICB faces different conditions and levels of financial risk, both in terms of liquidity risk/FDR (Ardana, 2018; Fatmawati & Hakim, 2020), operational risk/OER (Mardiana, 2018; Dewi & Sudarsono, 2021), and financing risk/NPF (Darma & Afandi, 2021).

Several recent studies regarding the effect of financial risk on the financial performance of Islamic banks in Indonesia have been carried out. Prasaja (2018) reviewed the financial performance of Islamic banks in Indonesia for the 2014-2016 period. The results of his research stated that financing risk (NPF) had no significant adverse effect on the financial performance (ROA) of Islamic banks. In contrast, liquidity risk (FDR) and operational efficiency risk (OER) have a significant positive effect on the financial performance of Islamic banks. Mardiana (2018) analyzed the effect of financial risk on the financial performance of Islamic banking in

Indonesia from 2011 to 2016. The results of his research stated that NPF had no significant adverse effect on the ROA of Islamic banks. In contrast, OER significantly adversely affects Islamic banks' ROA. Ardana (2018) examined the external and internal factors that affected the profitability of Islamic banks in Indonesia from 2011 to 2018. The results of his research stated that NPF had a significant adverse effect on Islamic banks' profitability (ROA). In contrast, FDR and OER have a significant positive effect on the ROA of Islamic banks.

Fatmawati and Hakim (2020) conducted a study on the influence of financial risks on the performance of Islamic banks from 2009 to 2018. Their findings revealed that FDR and OER exhibited a notable and detrimental effect on the ROA of Islamic banks. Conversely, NPF did not show a significant negative impact on ROA. On the other hand, Dewi and Sudarsono (2021) investigated the ROA of Islamic banks in Indonesia using the autoregressive distributed lag (ARDL) methodology from January 2015 to July 2021. Their research outcomes demonstrated that NPF had a noteworthy adverse influence on ROA. In contrast, OER did not display a significant detrimental effect on ROA.

In a recent study conducted by Nurwulandari et al. (2022), the impact of risk management on the growth of profitability in Indonesian Islamic banks during 2018-2021 was examined. Their research findings indicated that NPF had a noteworthy and adverse influence on Islamic banks' ROA. Conversely, OER significantly and positively affected these banks' ROA. Similarly, the research undertaken by Riyadi et al. (2022) focused on analyzing the influence of capital and liquidity risk factors on the profitability of Islamic banks in Indonesia for 2014-2019. Their study outcomes revealed that the capital factor substantially and negatively impacted Islamic banks' ROA. In contrast, FDR did not significantly impact Islamic banks' ROA. Additionally, the work of Pujiyanty et al. (2022) involved an analysis of the profitability of Indonesian ICBs during the timeframe of 2015-2019. Their research findings suggested that FDR exhibited a noteworthy and positive effect on the ROA of ICBs. This positive impact was attributed to the notion that a higher level of liquidity reflects a bank's health, indicating effective capital management and contributing to enhanced profitability.

Referring to several studies that examine the effect of financial risk on the financial performance of Islamic banks in Indonesia, as described above, the research results indicate that the impact of financial risk on financial performance could be more consistent. The following research gaps are found: First, several studies stated that FDR has a significant positive impact on the ROA of Islamic banks (Ardana, 2018; Fatmawati & Hakim, 2020; Prasaja, 2018; Pujiyanty et al., 2022). Meanwhile, the results of the latest research by Riyadi et al. (2022) stated that FDR did not have a significant positive impact on the ROA of Islamic banks. Second, several recent studies stated that NPF has a significant negative impact on the ROA of Islamic banks (Ardana, 2018; Dewi & Sudarsono, 2021; Prasaja, 2018). Meanwhile, research conducted by Mardiana (2018) states that NPF has no significant negative impact on the ROA of Islamic banks. Third, several studies state that OER has

Table 1. Research sample

No.	Criteria	2017	2018	2019	2020	2021	*Analysis units*
1.	ICBs registered with Indonesian OJK for the 2017–2021 period	13	14	14	14	12	67
2.	ICBs do not publish financial reports and annual reports containing complete information regarding research variables	1	2	1	1	2	7
3.	Number of unit analysis	12	12	13	13	10	60

3.2. Data, operational definitions, and variables measurements

This study uses secondary data obtained from annual reports of all ICBs in Indonesia for five years from 2017 to 2021. The data collected includes all research variables, including financial performance, liquidity risk, operational risk, financing risk, and bank size. The operational interpretation and quantification of variables adhere to the guidelines stipulated by Indonesian OJK Regulation No. 65/POJK.03/2016 regarding the Implementation of Risk Management for Islamic Commercial Banks and Islamic Business Units; Indonesian OJK

Regulation No. 8/POJK.03/2014 concerning the Evaluation of Soundness Levels for Islamic Commercial Banks and Islamic Business Units; Indonesia OJK Circular Letter No. 10/SEOJK.03/2014 concerning the Appraisal of Soundness Levels for Islamic Commercial Banks and Islamic Business Units. Furthermore, these parameters have been incorporated and applied in recent studies, ensuring alignment and consistency (Agustin & Darmawan, 2018; Darma & Afandi, 2021; Dasari & Wirman, 2020; Pujiyanty et al., 2022; Santoso, 2020). The operational definition and measurement of variables in this research are presented in Table 2 as follows:

**Table 2.** Operational definition and measurement of research variables

No.	Research variables	Operational definition	Measurements
1.	Financial performance (*ROA*)	The ability of a bank to obtain profit from its business activities with all its assets is measured by the profitability level of return on assets (ROA).	$ROA = Profit\ before\ tax\ /\ Total\ assets$
2.	Liquidity risk (*FDR*)	The bank's risk arises from the inability to meet maturing obligations from cash flow funding sources from third-party funds used to fund financing, as measured by the financing to deposit ratio (FDR).	$FDR = Total\ financing\ /\ Third\ party\ funds \times 100\%$
3.	Financing risk (*NPF*)	The bank's risk is due to customer failure to meet returns on financing received and past due, as measured by non-performing financing (NPF).	$NPF = Problem\ financing\ /\ Total\ financing \times 100\%$
4.	Operational risk (*OER*)	The bank's risk describes the level of efficiency in controlling operational costs in carrying out its business activities to obtain operating income, which is measured using the operating efficiency ratio (OER).	$OER = Operating\ cost\ /\ Operating\ income \times 100\%$
5.	Bank size (*SIZE*)	Bank size shows the scale of the bank as measured by the total amount of financing distributed to customers using *mudharabah, musyarakah, murabahah, istishna, ijarah,* and *qardh* contracts.	$SIZE = \Sigma Total\ financing$

3.3. Research model

Based on the literature review, the proposed research model is presented in Figure 1. The model shows the impacts of liquidity risk (*FDR*), financing

risk (*NPF*), and operational risk (*OER*) on the financial performance (*ROA*) of Indonesian ICBs. This model includes testing bank size (*SIZE*) as a moderating variable for the influence of the impacts of *FDR*, *NPF*, and *OER* on the *ROA* of Indonesian ICBs.

Figure 1. Research model
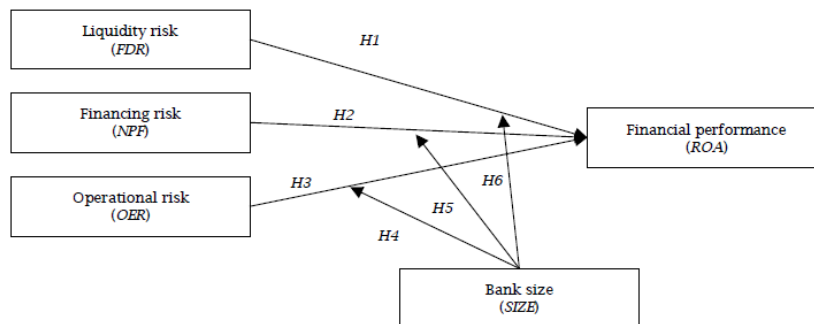
3.4. Data analysis and hypotheses testing

This study's data analysis encompassed both descriptive statistical examination and panel data regression analysis. Descriptive statistical analysis was employed to portray the characteristics of each distinct research variable. This involved detailing the observed data for variables and elucidating statistics such as mean, standard deviation, variance, maximum, and minimum values (Ghozali, 2016). Two-panel data regression models are used in this study to test the hypotheses, namely the multiple regression panel data model and the moderated regression panel data model:

$$ROA_{it} = \alpha + \beta_1 FDR_{it} + \beta_2 NPF_{it} + \beta_3 OER_{it} + \varepsilon_{it} \qquad (1)$$

$$ROA_{it} = \alpha + \beta_1 FDR * SIZE_{it} + \beta_2 NPF * SIZE_{it} + \beta_3 OER * SIZE_{it} + \varepsilon_{it} \qquad (2)$$

Furthermore, to test the independent and the moderation hypothesis, a partial test (t-test) is used with the decisions: If the probability value (p) is $\leq \alpha = 0.05$, the independent variables and moderating variables have no significant effect, and vice versa.

4. RESULT AND DISCUSSION

4.1. Results of descriptive statistical analysis

The variables observed in this study include financial performance (*ROA*), liquidity risk (*FDR*), financing risk (*NPF*), operational risk (*OER*), and bank size (*SIZE*). The descriptive statistical analysis results are presented in the following table based on the research variables mentioned above.

Referring to the variable descriptive statistics presented in Table 3, a detailed description of the research variables follows.

1. The average financial performance (*ROA*) of Indonesian ICBs is 0.012593 (1.26%). According to Indonesian OJK regulations, a healthy bank's financial performance standard is $ROA \geq 1.50\%$. Thus, in general, the ROA of Indonesian ICBs does not include healthy banks. The standard deviation of $ROA = 0.37427 >$ Mean $ROA = 0.012593$ shows that the financial performance of Indonesian ICBs varies widely, where the highest is 13.58%, and the lowest is -10.10%.

2. The average liquidity risk (*FDR*) of Indonesian ICBs is 0.842978 (84.3%). According to Indonesian OJK regulations, a healthy bank's liquidity risk standard is 80% < *FDR* < 110%. Indonesian ICBs are categorized as healthy banks. In addition, the standard deviation of $FDR = 0.189764 <$ Mean $FDR = 0.842978$ shows that the *FDR* variation is relatively small.

3. The financing risk (*NPF*) of Indonesian ICBs is 0.036557 (3.66%). According to Indonesian OJK regulations, a healthy bank's financing risk standard is *NPF* < 5%. It shows that, judging from its financing risk, Indonesia's ICB is categorized as a healthy bank. However, the standard deviation of $NPF = 0.034811 >$ Mean $NPF = 0.036557$ indicates that the variation of *NPF* among Indonesian ICBs is considerable, where the largest *NPF* is 22.1%, and the smallest *NPF* is 0.32%.

4. The operational risk (*OER*) of Indonesian CBIs shows an average of 0.942730 (94.27%) when compared to the standard operational risk of the banking industry, which is categorized as healthy banks is 85% $\leq$ *OER* $\leq$ 94%. Judging from its operational risk, Indonesian ICBs are generally categorized as healthy banks. The standard deviation of $OER = 0.276656 <$ Mean $OER = 0.942730$ shows that the variation in operational risk among Indonesian ICBs is relatively small.

5. The bank size (*SIZE*) of Indonesian CBIs shows the standard deviation of $SIZE = 1.049801 <$ Mean $SIZE = 29.83549$, indicating that the variation in bank size among Indonesian CBIS is relatively small.

Table 3. Descriptive statistical variables

Variables	Descriptive statistics			
	Mean	Maximum	Minimum	Standard deviation
ROA	0.012593	0.135800	-0.101000	0.037427
FDR	0.842978	1.967300	0.384900	0.189764
NPF	0.036557	0.221400	0.003200	0.034811
OER	0.942730	2.174000	0.575500	0.276656
SIZE	29.83549	32.03420	27.41450	1.049801

4.2. Hypotheses testing results

4.2.1. The results of independent hypotheses testing

Determining the appropriate regression panel data model for hypothesis testing the effect of financial risk on the financial performance of Indonesian ICBs is very important. To obtain a regression panel data model that is feasible for the independent hypothesis testing concerning the effects of *FDR*, *NPF*, and *OER* on the *ROA* of Indonesia ICBs, the approach of the common-effect model, fixed effects model, and random effect model were used. The estimation results of the feasibility of the regression panel data model are presented in Table 5. Referring to Table 5, the fixed effects model is suitable for hypothesis testing because the independent variables can explain the dependent variable by 96%, which is the highest compared to other models. Furthermore, the model is tested with the Chow test and Hausman test to ensure that the regression panel data fixed effects model is the most appropriate for testing hypotheses based on data characteristics.

The results of testing the model using the Chow and Hausman tests are presented in Table 5.

based financing mechanism with *murabahah* and *istishna* contracts, a financing mechanism based on lease with *ijarah* contract, as well as a non-commercial financing mechanism with *al-qard* contracts. The type of financing mechanism carries unique characteristics of FDR, NPF, and OER and their effects on ROA among Indonesian ICBs.

The results of testing the moderation hypotheses proposed in the fourth hypothesis (*H4*), that bank size reduces the negative effect of *FDR* on the *ROA* of Indonesian ICBs, is rejected. It shows that bank size depends on total financing and cannot reduce the negative impact of liquidity risk on financial performance. The findings of this study reveal that, regardless of their scale, both large and small Islamic banks do not demonstrate a substantial influence of bank size on either financial risk or financial performance. Therefore, the ability of Indonesian ICBs to manage and control liquidity risk needs to be improved by prioritizing third-party funds to be invested in profitable financing to improve their financial performance.

Then, related to the fifth hypothesis (*H5*), bank size reduces the negative effect of financial risk (*NPF*) on the *ROA* of Indonesian ICBs, which is accepted. The results of this study support recent research, which states that increasing the amount of financing carried out by Islamic banks is followed by appropriate, effective, and efficient financing risk management to improve their financial performance. It shows that ICBs Indonesia's financing risk management has been carried out optimally by considering the size of their financing and the type of risk in each financing mechanism, namely through *mudharabah* and *musyarakah* (profit sharing financing), *murabahah* and *istishna* (sales financing), *ijarah* (lease financing), *al-qard* (non-commercial financing), and other appropriate and profitable financing mechanisms to improve its financial performance. Based on the theory of economies scale (McGee, 2015), the results of this study indicate that financing risk management at Indonesia ICBs has been supported by innovative fintech, which makes it possible to oversee and decide on the determination and implementation of profitable financing mechanisms, and to eliminate problematic financing, such as non-current financing, doubtful financing, and bad financing, to improve its financial performance.

Finally, regarding the sixth hypothesis (*H6*), bank size reduces the negative impact of *NPF* on the *ROA* of Indonesian ICBs, which is accepted. The results of this study support recent research which states that Islamic banks in Indonesia have developed innovative fintech in providing banking products and services, such as digital banking services (Riza, 2019). Based on the theory of economies of scale (McGee, 2015), the results of this study indicate that innovative financial technology developed in providing banking products and services at Indonesian ICBs has succeeded in supporting operational risk management in a proper, effective, and efficient manner. Large and even small-scale ICBs can utilize operational costs more efficiently to obtain optimal operating income. It is recommended that future researchers examine and analyze the extent to which fintech supports the implementation of risk management of Indonesian Islamic banks to improve their performance, both financial performance and Islamic performance.

5. CONCLUSION

This study examined the impact of financial risk on the financial performance of Indonesian ICBs with bank size as a moderator. The research findings stated that liquidity risk does not significantly impact the financial performance of ICBs. In contrast, financing risk and operational risk have a significant negative impact on their financial performance. Furthermore, the study reveals that bank size does not reduce the negative impact of liquidity risk on financial performance. However, it mitigates the negative impact of financing and operational risks on financial performance. The results suggest that effective management and control of financing risk and operational risk, along with considerations of bank size, can enhance the financial performance of Indonesian ICBs. The findings contribute to a better understanding of the relationship between financial risk, bank size, and financial performance in Islamic banking. Future research could broaden the scope to include a broader range of Islamic banking institutions and more extended observation periods to gain a more comprehensive understanding.

This study is subject to certain limitations. The data source is confined to the annual reports of Islamic banks in Indonesia, potentially introducing constraints on the information's accuracy and comprehensiveness. The study's timeframe is restricted to the most recent five years, which may limit a comprehensive understanding of long-term trends and the evolving impacts that may unfold over a more extended period. Despite considering financial risk variables and bank size, other factors, such as macroeconomic variables, regulatory changes, and market dynamics could exert unexplored influences. The research findings might have limitations regarding their applicability for broader generalizations, especially in an international context or within the framework of Islamic banks in other countries.

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