THE MODERATION EFFECT OF RISK GOVERNANCE STRUCTURE ON RISK MANAGEMENT AND ITS IMPACT ON FINANCIAL AND SOCIAL PERFORMANCE OF ISLAMIC BANKS IN INDONESIA

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Abstract

Introduction to The Problem: Risk management is critical for Islamic banks, which must navigate financial and operational risks while adhering to Sharia principles. Understanding how risk governance structures influence risk management's effectiveness in enhancing financial and social performance is essential.

Purpose/Objective Study: This study explores the moderation effect of risk governance structures on the relationship between risk management, specifically insolvency risk, financing risk, and operational risk, and Islamic banks' financial and social performance in Indonesia.

Design/Methodology/Approach: The research utilized a dynamic panel data regression method to analyze data extracted from the annual reports of 11 Islamic commercial banks spanning from 2012 to 2021.

Findings: The study finds that specific risk governance structures, including the size of the audit committee, its independence, the expertise of its members, and the frequency of its meetings, as well as the quality of external audits, significantly enhance the impact of risk management on both the financial and social performance of Islamic banks. Additionally, specific structures unique to Islamic banks, such as the Sharia Supervisory Board size and the frequency of their meetings, also strengthen this effect.

Paper Type: Research Article

Keywords: Risk governance structure; risk management; financial performance; social performance; Islamic bank.

INTRODUCTION

The banking sector holds a pivotal position in propelling the national economy forward. Banks stimulate national economic growth through their intermediary function by facilitating the flow of funds to support production and consumption endeavors. This strategic role is fortified by implementing Sharia banking development policies outlined in the blueprint or roadmap for Sharia banking development by regulatory authorities such as Bank Indonesia (BI) and the Financial Services Authority (OJK). Since 2008, the national banking industry has operated under a dual banking system following the enactment of Law Number 21 of 2008 concerning Sharia Banking (Sharia Banking Law). The Islamic banking sector continues to witness positive growth, which is evident from its total assets reaching Rp802 trillion as of December 2022, capturing a market share of 6.63% of the total national banking assets. This indicates a rise in Islamic banking's market share compared to the previous year, which stood at 6.32%.

Per the Islamic Financial Services Industry Stability Report of 2022, Sharia banking in Indonesia has the highest growth rate across Southeast Asia. The escalation of Sharia banking assets in Indonesia reached 12.6% (yoy) by 2021, with financing distribution and third-party fund mobilization growing at 5.5% (yoy) and 12.3% (yoy), respectively, by the same period. The OJK, acting as the regulatory body, has issued the Sharia Banking Development Roadmap 2020-2025 to sustain the momentum. This strategic framework entails (i) reinforcing the identity of Sharia banking, (ii) fostering synergy within the Sharia economic ecosystem, and (iii) enhancing licensing, regulation, and supervision.

Islamic banking resilience is a crucial focus for OJK in its efforts to develop the industry. Strengthening capital and efficiency is essential for enhancing competitiveness and resilience amid economic uncertainties post-COVID-19. Managing risks is mandatory to ensure sustainability, requiring identification, measurement, monitoring, and mitigation while adhering to Sharia principles. Key risks include financing and operational risks, alongside insolvency risks.
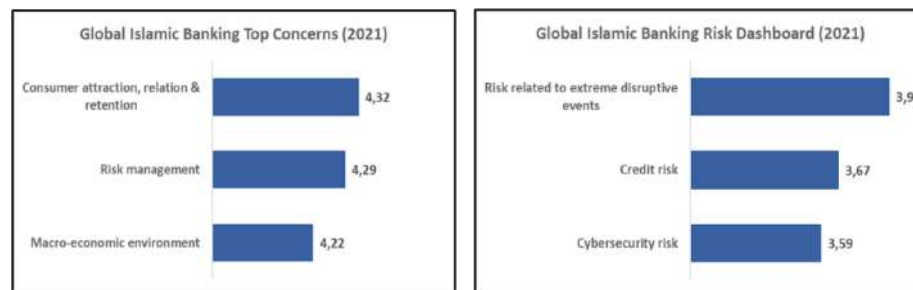
Figure 1. The result of the Survey on Global Islamic Bank's Concerns and Key Risk

Based on the survey conducted by the General Council for Islamic Banks and Financial Institutions in 2021, as depicted in Figure 1, three main concerns have been highlighted for the global Islamic banking sector: 1. Consumer issues, 2. Risk management, and 3. Macroeconomic conditions. These findings resonate with the post-COVID-19 era, which has significantly impacted macroeconomic conditions and altered consumer behavior, necessitating effective risk management and corporate governance practices within the Islamic banking industry to ensure resilience and sustained growth. Furthermore, the survey outlines three primary risks concerning Islamic banking management worldwide: (1) Risks associated with extreme disruptive events, (2) Credit/financing risks, and (3) Cybersecurity risks.

The emergence of extreme disruptive events represents a new risk frontier alongside climate change. The recent COVID-19 pandemic poignantly illustrates this phenomenon, emphasizing its significance. Its intertwined nature with credit risk is evident, given its substantial impact on the real economy, which is pivotal for Islamic bank financing. Furthermore, operational risk, particularly cybersecurity, emerges as a paramount concern. As Islamic banking increasingly relies on digital platforms, the operational dependence on IT systems and infrastructure magnifies the urgency of addressing this risk.

The selection of these risks aligns with the findings of Nguyen & Dang (2022) and Jallali & Zoghlami (2022), which highlights bankruptcy risk, financing risk, and operational risk as crucial aspects in measuring the implementation of bank risk management. Effective risk management implementation is closely tied to the governance structure. Nguyen & Dang (2022) identify several aspects of risk governance structure affecting risk management implementation, including (i) the number of audit committees, (ii) the independence of audit committees, (iii) the proportion of financial and audit experts on audit committees, (iv) frequency of audit committee meetings, (v) external audit quality, and (vi) risk governance effectiveness index. In the context of Islamic banking risk management, Jallali & Zoghlami (2022) underscore the importance of (i) the number of Sharia Supervisory Boards and (ii) the frequency of Sharia Supervisory Board meetings as key governance structure aspects.

Figure 2. The Conceptual Transformation of Islamic Banks

Islamic banks in Indonesia operate under two primary mandates: commercial and social. Nugraheni (2018) identified four aspects of their social responsibility: economic growth, societal welfare, stakeholder engagement, and human resource development. Furthermore, enhancing risk management aligns with Indonesia's Islamic banking development roadmap (2020-2025), aiming for better performance and contribution to Sustainable Development Goals. Embracing the principle of Creating Shared Values embodies the essence of Maqashid *Shariah* in *Shariah* economics, as depicted in Figure 2.

Implementing Islamic banking risk management has become a significant concern for management and regulators in enhancing the performance of Islamic banks, both financially and socially. Tarazi & Abedifar (2022) literature review highlights that effective risk governance structures are crucial for improving risk management practices. However, agency problems persist, leading bank managers to prioritize short-term financial performance over risk considerations. The social performance of Islamic banks is often overlooked due to the associated costs, despite its importance. Furthermore, research on risk governance structures and their impact on bank stability and performance remains to be limited, especially within Islamic banking. Therefore, there is a need for further exploration in this area, mainly focusing on Islamic banks in Indonesia, considering the significant growth of the Islamic banking industry in Southeast Asia, as reported in the Islamic Financial Services Industry Stability 2022.

Effective corporate governance offers a viable solution to mitigate agency problems (Nguyen & Dang, 2022). The research findings by Zeineb & Mensi (2017) on 56 Islamic banks in the Middle East from 2004 to 2013 demonstrate a strong correlation between robust governance structures and the efficiency levels of Islamic banks. This serves as the driving force behind this study, aiming to explore the moderating influence of risk governance structures on risk management implementation and performance within Indonesian Islamic banks. Such insights can significantly aid bank management and regulators in fostering the development of the national Islamic banking industry in alignment with the Roadmap for the Development of Islamic Banking in Indonesia 2020-2025.

LITERATURE REVIEW

Insolvency Risk

Based on the available research, bankruptcy risk is commonly measured using the Z-Score. According to Srairi *et al.* (2022), the Z-Score is also a measure to assess banking risk-taking behavior. The Z-Score indicator estimates that banks maintain resilience and are far from bankruptcy. This indicator combines bank capital or equity with the bank's ability to

generate profits while considering existing risks (Nguyen, 2020). The Z-Score is calculated using the formula:

$$Z - score = \frac{ROA+ETA}{sd(ROA)}$$

(1)

Understanding financial ratios such as Return on Asset (ROA), Equity to Asset (ETA) ratio, and SD (ROA) is essential in assessing the financial health and viability of banks. The Z-Score formula clarifies that as the Z-Score increases, the likelihood of a bank going bankrupt decreases, and vice versa. Therefore, Z-Score serves as an indicator of a bank's resilience or ability to withstand financial distress. Additionally, capitalization plays a crucial role in determining bankruptcy risk. According to Alsharif (2021), a solid capital base reduces the likelihood of bankruptcy. This underscores the pivotal role of capitalization in shaping bank profitability.

Credit Risk

As defined by Jorion (2011), credit risk represents the economic hazard arising from the inability of another party or debtor to meet its contractual obligations. This risk entails comprehensive data on the likelihood of default, the extent of economic losses upon default, and the magnitude of credit exposure prone to default. Credit risk encompasses instances where debtors fail to meet obligations in the future and during ongoing transactions. Additionally, settlement risk must be considered. Essentially, the distribution of credit risk comprises a blend of multiple variables:

1. Default occurs when another party fails to make payments as agreed, and it is typically reflected in the probability of default (PD).
2. Credit exposure (CE) represents the economic value or benefit extended to another party, often called exposure at default (EAD) when default occurs.
3. Loss-given default (LGD) reflects the portion of value lost when a default transpires.

Assessing credit risk involves two primary methodologies: the actuarial method and the market-price method. The actuarial method objectively evaluates default risk by analyzing historical data on previous default occurrences. In contrast, the market-price method relies on market data such as debt prices, equity values, and credit derivatives risk-neutral pricing to gauge credit risk. Within the Islamic banking sector, credit risk is typically gauged using the Non-Performing Financing (NPF) ratio, which measures the proportion of outstanding financing balances considered non-performing against the total disbursed financing balances.

According to Hanggraeni (2019), credit risk is an inherent part of any credit allocation endeavor. As intermediaries, Islamic banks are exposed to credit or financing risks as they engage in their primary function of disbursing financing. For instance, when engaging in profit-sharing financing arrangements such as *Mudharabah* or *Musyarakah*, there exists the risk, as highlighted by Hanggraeni (2019), that the financing may incur losses due to the customer's business downturn, resulting in the inability of the customer to reimburse the principal amount along with the agreed profit share, or failing to provide the stipulated profit share level.

Specifically, *Shariah*-compliant banks employ *Qardh* financing, which involves providing loans (interest-free) to eligible customers (*muqtaridh*) in need. Customers must repay the principal amount borrowed within the mutually agreed timeframe, either in whole or through installment payments. This arrangement is governed by Fatwa DSN MUI No.19/DSNMUI/IV/2000 regarding *Qardh*. *Qardh* financing carries financing risks similar to other financing arrangements. Islamic banks often utilize *Qardh* financing for social purposes as it does not involve any expected profits from the financing disbursement.

Operational Risk

According to Jorion (2011) in his work "Operational Risk with Excel and VBA: Applied Statistical Methods for Risk Management, operational risk is characterized as any risk originating outside the scope of market and credit risks". Hanggraeni (2019) offers another perspective, defining operational risk as assessing the connection between a company's business operations and the diverse results they yield. Operational risk centres on the disparity between a company's overall performance and its operational functions concerning revenue generation. It encompasses various operational facets or business activities influencing a company's financial prowess.

Hanggraeni (2019) suggests that efficient capital allocation is one advantage of managing risks within operational processes. By identifying and addressing potential risks, organizations can allocate their financial resources more effectively, ensuring that capital is utilized to maximize returns and minimize unnecessary expenditures.

Operational risks can be managed through various approaches:

1. Managing operational risks can be done through several approaches, including Developing corporate governance guidelines. These guidelines have been widely adopted to establish standard operating procedures for companies and suggest the need for risk identification, assessment, monitoring, and reporting processes. Effective implementation of corporate governance guidelines requires clear objectives and accurate and reliable measurement of operational risks.

2. Implementing operational control mechanisms is necessary to ensure accurate measurement. Measurements based on cause-and-effect relationships and appropriate actions or interventions are essential to successfully managing operational risks.

3. Establishing operational risk metrics Measurement is a prerequisite for effective operational risk management to understand the relationship between fluctuations in company performance and business or operational activities. Data or information from measurements can be used to estimate the level of risk and uncertainty in the company's revenue acquisition.

Risk Governance Structure

The study conducted by Nguyen (2020), examining 104 commercial banks across 10 ASEAN countries from 2002 to 2019, revealed the components comprising the risk governance structure of banks:

1. The number of audit committees
2. Independence of audit committees
3. The quantity of financial and audit experts within audit committees
4. Frequency of audit committee meetings
5. The existence of risk committees
6. The quality of external audits positively correlates with banks' operational scope and monitoring.

When correlating the risk governance structure with the implementation of risk management, based on the principles of the Indonesian National Standard (SNI) ISO 31000, the risk management framework must be fully integrated into the corporate governance structure, thereby positioning risk management at the core of organizational management.

Theoretical Framework

The agency theory explains the divergence of interests between owners and managers of a company. Owners expect high performance despite facing significant risks, while managers avoid taking substantial risks. This highlights agency problems that reduce the effectiveness of risk management (Nguyen & Dang, 2022). The study also indicates that aspects of bank risk management, including operational and credit risks and the effectiveness of risk governance, significantly influence bank financial performance. Consistent with this, the findings of Laeven & Levine (2009) suggest that the risk-taking behavior of bank managers is significantly related to the influence of bank owners within the framework of each bank's governance structure. According to the research by Jallali

& Zoghlami (2022), the risk governance structure plays a significant role in enhancing corporate governance, risk management effectiveness, and bank financial performance. In the context of Islamic bank governance, research conducted by Nugraheni (2018) reveals that the number of Sharia Supervisory Board (SSB) members and the reputation of SSB significantly influence the social performance of Islamic banks. Tashkandi (2022) suggests that Sharia supervision and corporate governance aspects significantly affect the performance of Islamic banks.

Based on the explanation above, it is known that an effective corporate governance structure can enhance the implementation of risk management and the performance of Islamic banks. Therefore, this research sets the following hypotheses:

H1a: The number of audit committees strengthens the implementation of risk management in Islamic banks' financial performance.

H1b: The number of audit committees strengthens the implementation of risk management in Islamic banks' social performance.

H2a: The independence of the audit committee strengthens the implementation of risk management in Islamic banks' financial performance.

H2b: The audit committee's independence strengthens the risk management implementation in Islamic banks' social performance.

H3a: The proportion of expert members in the audit committee strengthens the implementation of risk management in Islamic banks' financial performance.

H3b: The proportion of expert members in the audit committee strengthens the implementation of risk management in Islamic banks' social performance.

H4a: The frequency of audit committee meetings strengthens the implementation of risk management in Islamic banks' financial performance.

H4b: The frequency of audit committee meetings strengthens the implementation of risk management in Islamic banks' social performance.

H5a: The number of Sharia Supervisory Board members strengthens the implementation of risk management in Islamic banks' financial performance.

H5b: The number of Sharia Supervisory Board members strengthens the implementation of risk management in Islamic banks' social performance.

H6a: The frequency of Sharia Supervisory Board meetings strengthens the implementation of risk management in Islamic banks' financial performance.

H6b: The frequency of Sharia Supervisory Board meetings strengthens

the implementation of risk management in Islamic banks' social performance.

H7a: The quality of external audits strengthens the implementation of risk management in Islamic banks' financial performance.

H7b: The quality of external audits strengthens the implementation of risk management in Islamic banks' social performance.

H8a: Risk governance's effectiveness strengthens risk management implementation in Islamic banks' financial performance.

H8b: Risk governance's effectiveness strengthens risk management implementation in Islamic banks' social performance.

METHODOLOGY

This research will employ a quantitative approach that uses panel data regression to examine the moderating effect of risk governance structure on implementing risk management in Islamic banks' financial and social performance. The study utilizes a sample comprising Islamic banks that have operated based on Sharia principles for at least one year as of December 31, 2021, and have presented annual reports from 2012 to 2021. Thus, the sample consists of 11 Islamic banks out of the 13 existing ones, with 91 observations. According to Nugraheni (2018) research findings, the Social Performance Index (SPI) can be measured using the following approach:

1. Contribution to economic growth, measured by:

    The ratio of profit-sharing modes of financing to total financing (MMR):

$$MMR = \frac{Mudharabah + Musharakah}{Total\ financing} \qquad (2)$$

    With the following criteria:

    Score 5 if MMR > 50%,

    Score 4 if 40% < MMR <= 50%,

    Score 3 if 30% < MMR <= 40%,

    Score 2 if 20% < MMR <= 30%,

    Score 1 if MMR <= 20%

    The ratio of the intensity of agency roles of Islamic banking (IAR):

$$IAR = \frac{Mudharabah\ Deposit}{Total\ Funding} \qquad (3)$$

    With the following criteria:

    Score 5 if IAR > 90%,

    Score 4 if 80% < IAR <= 90%,

    Score 3 if 70% < IAR <= 80%,

    Score 2 if 60% < IAR <= 70%,

    Score 1 if IAR <= 60%

2. Contribution to society, measured by:

The ratio of *Qardh* financing (QR)

$$QR = \frac{Qardh\ Financing}{Total\ Financing} \qquad (4)$$

With the following criteria:

Score 5 if QR > 5%,

Score 4 if 3% < QR <= 5%,

Score 3 if 2% < QR <= 3%,

Score 2 if 1% < QR <= 2%,

Score 1 if QR <= 1%

The ratio of zakah performance (ZR)

$$ZR = \frac{Zakah\ Distribution}{Profit\ Before\ Tax} \qquad (5)$$

With the following criteria:

Score 5 if ZR > 2,5%,

Score 4 if 2% < ZR <= 2,5%,

Score 3 if 1,5% < ZR <= 2%,

Score 2 if 1% < ZR <= 1,5%,

Score 1 if ZR <= 1%

3. Contribution to stakeholders, measured by:

The contribution of the mudhorib (CM)

$$CM = \frac{Wages\ Expenses\ and\ Other\ Welfares}{Operational\ Revenue} \qquad (6)$$

With the following criteria:

Score 5 if CM > 15%,

Score 4 if 12% < CM <= 15%,

Score 3 if 9% < CM <= 12%,

Score 2 if 6% < CM <= 9%,

Score 1 if CM <= 6%

The contribution of *Mudharabah* deposits (CUH)

$$CUH = \frac{Revenue\ Sharing\ Distribution}{Tota\ Mudharabah\ Mutiaqah\ Investment} \qquad (7)$$

With the following criteria:

Score 5 if CUH > 15%,

Score 4 if 12% < CUH <= 15%,

Score 3 if 9% < CUH <= 12%,

Score 2 if 6% < CUH <= 9%,

Score 1 if CUH <= 6%

4. Contribution to the development of human resource capacity

measured using the Contribution of Human Resources Development (CHRD).

$$CHRD = \frac{Education\ and\ Traianing\ Expenses}{Profit\ After\ Tax} \quad (8)$$

With the following criteria:

Score 5 if CHRD > 15%,

Score 4 if 12% < CHRD <= 15%,

Score 3 if 9% < CHRD <= 12%,

Score 2 if 6% < CHRD <= 9%,

Score 1 if CHRD <= 6%

After that, the SPI is measured using the following formula:

$$SPI = \frac{Total\ value}{35} \times 100\%$$

Nguyen and Dang (2022) developed an index to measure the effectiveness of risk governance (RGEI). RGEI is measured using the following formula:

$$RGEI = BOSDEX + BIDDEX + ACSDEX + ACIDEX + FAMDEX + AMFDEX + BIG4DEX \quad (9)$$

With the following criteria:

BOSDEX, score 1 if the board size is less than the median of board size in the specified period and score 0 if vice versa;

BIDDEX, score 1 if the proportion of independent board members is more than the median of the proportion of independent board in the specified period and score 0 if vice versa;

ACSDEX, score 1 if the audit committee size is less than the median of audit committee size in the specified period and score 0 if vice versa;

ACIDEX, score 1 if the proportion of independent audit committee members is more than the median of the proportion of independent audit committee in the specified period and score 0 if vice versa;

FAMDEX, score 1 if the proportion of finance and audit experts in the audit committee is more than the median of the independent board member in the specified period, and score 0 if vice versa;

AMFDEX, score 1 if the frequency of audit committee meetings is more than the median of the frequency of audit committee meetings, and score 0 if vice versa;

BIG4DEX, score 1 if the world Big Four audit company audits the bank, and score 0 if vice versa.

An empirical model is constructed to analyze the moderating effect of risk governance structure on the implementation of risk management

on the performance of Islamic banks. These variables are utilized to formulate a regression model with the general form as follows:

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_j \sum_{j=2}^{4} RISK_{it} + \beta_k \sum_{j=5}^{12} RISK_{it} * RGS_{it} + \beta_l \sum_{j=13}^{14} CONT_{it} + \varepsilon_{it} \quad (10)$$

$$SPI_{it} = \beta_0 + \beta_1 SPI_{it-1} + \beta_j \sum_{j=2}^{4} RISK_{it} + \beta_k \sum_{j=5}^{12} RISK_{it} * RGS_{it} + \beta_l \sum_{j=13}^{14} CONT_{it} + \varepsilon_{it} \quad (11)$$

The data analysis method that will be used is panel data regression analysis with a system generalized method of moments (system GMM) approach using Microsoft Excel and RStudio. Microsoft Excel is utilized to process the data from content analysis on Islamic banks' annual reports and publication reports, while RStudio is employed to conduct panel data regression. The RStudio package used is plm (Linear Models for Panel Data). The data collected in Microsoft Excel will then be used as input data in RStudio.

RESULTS AND DISCUSSION

The Moderating Effect of Audit Committee Membership

Panel data processing using the System GMM method has been conducted to test hypotheses 1a and 1b. Table 1. illustrates the estimation results of regressions (1) and (2). Both regression results are considered to have valid and consistent instruments, reflected in the Sargan test p-values > 5%, which are 0.953 and 0.999, respectively, and the 2nd autocorrelation test p-values > 5%, which are 0.950 and 0.922, respectively. Based on the regression results (1), there is no support for hypothesis 1a as there is no significance in the moderating effect of audit committee membership on the implementation of risk management towards the financial performance of Islamic banks. However, there is support for hypothesis 1b as the results obtained in regression (2) show significance, indicating that the number of audit committee members strengthens the effectiveness of risk management on the social performance of Islamic banks. The outcomes of regressions 1 and 2 are presented in Table 1:

Table 1. Estimation Results of Regressions (1) and (2)

Risk Governance Structure Var.: ASIZE					
Regression (1)			**Regression (2)**		
DependentVar.: ROA	Coef	Pr(>|z|)	DependentVar.: SPI	Coef	Pr(>|z|)
Lag(ROA)	-0.020	0.929	Lag(SPI)	0.709	**1.44e-05***
Zscore	0.015	0.490	Zscore	0.055	0.215
NPF	-2.088	0.649	NPF	-0.818	0.907
DROA	-6.940	0.463	DROA	-39.344	**0.005**
Zscore*ASIZE	-0.002	0.732	Zscore*ASIZE	-0.019	**0.095.**
NPF*ASIZE	0.496	0.647	NPF*ASIZE	-0.098	0.955
DROA*ASIZE	1.288	0.628	DROA*ASIZE	12.305	**0.001**
Ln(BAAG)	-0.009	**0.089.**	Ln(BAAG)	0.010	0.720
Ln(BASI)	0.001	0.309	Ln(BASI)	0.024	**0.016***
Sargan test (p-value)		0.953	Sargan test (p-value)		0.999
AR2 test (p-value)		0.950	AR2 test (p-value)		0.922
Remarks: ".": significant at 10% confidence level "*": significant at 5% confidence level			"**": significant at 1% confidence level "***": significant at 0.1% confidence level		

The Moderating Effect of Audit Committee Members' Independence

The System GMM method was employed to process panel data, aiming to evaluate hypotheses 2a and 2b. The outcomes of regressions 3 and 4 are presented in Table 2:

Table 2. Estimation Results of Regressions (3) and (4)

Risk Governance Structure Var.: ACIN					
Regression (3)			**Regression (4)**		
DependentVar.: ROA	**Coef**	**Pr(>|z|)**	**DependentVar.: SPI**	**Coef**	**Pr(>|z|)**
Lag(ROA)	-0.038	0.797	Lag(SPI)	-0.276	0.259
Zscore	0.007	0.435	Zscore	0.118	**0.009****
NPF	2.952	**0.083.**	NPF	-20.029	**0.016***
DROA	-0.281	**0.069.**	DROA	-84.494	0.157
Zscore*ACIN	-0.0001	0.986	Zscore*ACIN	-0.120	**0.007****
NPF*ACIN	-3.219	0.107	NPF*ACIN	29.868	**0.004****
DROA*ACIN	20.128	**0.096.**	DROA*ACIN	87.900	0.143
Ln(BAAG)	-0.016	**0.010***	Ln(BAAG)	0.0001	0.997
Ln(BASI)	0.003	**0.039***	Ln(BASI)	0.061	**2.49e-06*****
Sargan test (p-value)		0.999	Sargan test (p-value)		0.999
AR2 test (p-value)		0.753	AR2 test (p-value)		0.089
Remarks: ".": significant at 10% confidence level "*": significant at 5% confidence level			"**": significant at 1% confidence level "***": significant at 0.1% confidence level		

The tabulated data illustrates regressions (3) and (4) estimation findings. Both regression analyses indicate the presence of valid and consistent instruments, with Sargan test p-values exceeding 5% at 0.999 each and 2nd autocorrelation test p-values at 0.753 and 0.089, respectively, surpassing the 5% significance threshold. Consequently, the obtained results support hypotheses 2a and 2b, highlighting significant correlations in regression (3) and (4) concerning the audit committee's independence, which substantially enhances risk management effectiveness concerning Islamic banks' financial and social performance.

The Moderating Effect of Audit Committee Expertise Proportion

Panel data processing using the System GMM method has been conducted to test hypotheses 3a and 3b. The processing results on regression 5 and regression 6 are as follows:

Table 3. Estimation Results of Regressions (5) and (6)

Risk Governance Structure Var.: FAEA					
Regression (5)			**Regression (6)**		
DependentVar.: ROA	**Coef**	**Pr(>|z|)**	**DependentVar.: SPI**	**Coef**	**Pr(>|z|)**
Lag(ROA)	0.242	0.458	Lag(SPI)	0.564	**0.011***
Zscore	0.006	0.730	Zscore	-0.021	0.838
NPF	5.206	**0.063.**	NPF	17.602	0.350
DROA	-2.278	0.775	DROA	-7.567	0.878
Zscore*FAEA	0.002	0.919	Zscore* FAEA	0.012	0.920
NPF* FAEA	-6.597	**0.057.**	NPF* FAEA	-23.448	0.380
DROA* FAEA	-0.007	0.999	DROA* FAEA	13.375	0.809
Ln(BAAG)	-0.009	**<2e-16*****	Ln(BAAG)	0.022	0.364
Ln(BASI)	-0.00001	0.987	Ln(BASI)	0.025	**0.0004*****
Sargan test (p-value)		0.999	Sargan test (p-value)		0.686
AR2 test (p-value)		0.248	AR2 test (p-value)		0.905
Remarks: ".": significant at 10% confidence level "*": significant at 5% confidence level			"**": significant at 1% confidence level "***": significant at 0.1% confidence level		

Table 3 above depicts the estimation results of regressions (5) and (6). Both regression results are assessed to have valid and consistent instruments, reflected by the Sargan test p-values > 5%, which are 0.999 and 0.686, respectively, and the 2nd autocorrelation test p-values > 5%, which are 0.248 and 0.905, respectively.

Regression result (5) indicates that overall risk management implementation significantly influences the financial performance of Islamic banks. Interestingly, regression (5) shows that the significant moderating effect of audit committee expertise proportion strengthens the effectiveness of financing risk management on the financial performance of Islamic banks because its moderation weakens the negative correlation between risk management and the financial performance of Islamic banks. Regression (6) indicates no significant influence of risk management implementation on the social performance of Islamic banks. Similarly, the moderating effect of audit committee expertise proportion on risk management towards the social performance of Islamic banks is not significant. These results fail to support hypothesis 3b.

The Moderating Effect of Audit Committee Meeting Frequency

Panel data processing using the System GMM method has been conducted to test hypotheses 4a and 4b. The processing results for regressions 7 and 8 are as follows:

Table 4. Estimation Results of Regressions (7) and (8)

Risk Governance Structure Var.: ACMF					
Regression (7)			**Regression (8)**		
DependentVar.: ROA	**Coef**	**Pr(>|z|)**	**DependentVar.: SPI**	**Coef**	**Pr(>|z|)**
Lag(ROA)	0.460	0.381	Lag(SPI)	0.702	0.407
Zscore	0.011	**2.63e-05***	Zscore	-0.006	0.701
NPF	0.375	0.416	NPF	-2.616	**0.078.**
DROA	-4.799	**0.0003***	DROA	6.506	0.696
Zscore*ACMF	-0.0003	0.394	Zscore* ACMF	-0.0001	0.895
NPF* ACMF	-0.028	0.636	NPF* ACMF	0.243	0.324
DROA* ACMF	0.237	**0.053.**	DROA* ACMF	-0.674	0.706
Ln(BAAG)	-0.007	0.108	Ln(BAAG)	0.022	0.749
Ln(BASI)	0.0003	0.798	Ln(BASI)	0.016	0.669
Sargan test (p-value)		0.998	Sargan test (p-value)		0.726
AR2 test (p-value)		0.572	AR2 test (p-value)		0.651
Remarks: ".": significant at 10% confidence level "**": significant at 1% confidence level "*": significant at 5% confidence level "***": significant at 0.1% confidence level					

Table 4 above illustrates the estimation results of regressions (7) and (8). Both regression results are assessed to have valid and consistent instruments, reflected in the Sargan test p-values > 5%, which are 0.998 and 0.726, respectively, and the 2nd autocorrelation test p-values > 5%, which are 0.572 and 0.651, respectively.

Regression (8), however, indicates that the influence of audit committee meeting frequency moderation is insignificant in implementing risk management toward the social performance of Islamic banks. This result fails to support hypothesis 4b. Based on the results, only support for hypothesis 4a statement is obtained since significant correlation results are only obtained in regression (7), where the moderation effect of audit committee meeting frequency significantly strengthens the effectiveness of risk management towards the financial performance of Islamic banks.

The Moderating Effect of the Number of Sharia Supervisory Board Members

Panel data processing using the System GMM method has been conducted to test hypotheses 5a and 5b. The processing results on regressions (9) and (10) are as follows:

Table 5. Estimation Results of Regressions (9) and (10)

Risk Governance Structure Var.: SBSZ					
Regression (9)			**Regression (10)**		
DependentVar.: ROA	**Coef**	**Pr(>|z|)**	**DependentVar.: SPI**	**Coef**	**Pr(>|z|)**
Lag(ROA)	0.303	**0.001****	Lag(SPI)	2.845	**0.012***
Zscore	-0.0003	0.939	Zscore	-0.200	**0.014***
NPF	1.500	0.192	NPF	-2.234	0.556
DROA	-0.132	**0.026***	DROA	109.424	**0.018***
Zscore*SBSZ	0.004	0.104	Zscore* SBSZ	0.103	**0.018***
NPF* SBSZ	0.615	0.193	NPF* SBSZ	1.492	0.438
DROA* SBSZ	4.977	**0.071**	DROA* SBSZ	-53.049	**0.018***
Ln(BAAG)	-0.005	0.196	Ln(BAAG)	-0.206	**0.069.**
Ln(BASI)	0.001	0.327	Ln(BASI)	-0.079	0.123
Sargan test (p-value)		0.999	Sargan test (p-value)		1.000
AR2 test (p-value)		0.239	AR2 test (p-value)		0.640
Remarks: ".": significant at 10% confidence level "**": significant at 1% confidence level "*": significant at 5% confidence level "***": significant at 0.1% confidence level					

The estimation results in Table 5 showcase the outcomes of regressions (9) and (10). Both sets of regression results are deemed to possess valid and consistent instruments, evident from the Sargan test p-values exceeding 5%, standing at 0.999 and 1.000, respectively, as well as the 2nd autocorrelation test p-values surpassing 5%, which are 0.239 and 0.640 respectively. Upon analyzing the results, it can be inferred that there is support for hypotheses 5a and 5b, as regressions (9) and (10) demonstrate that the moderating effect of the number of Sharia Supervisory Board members significantly enhances the efficacy of risk management concerning the financial and social performance of Sharia-compliant banks.

The Moderating Effect of Sharia Supervisory Board Meeting Frequency

Panel data processing using the System GMM method has been conducted to test hypotheses 6a and 6b. The processing results on regressions (11) and (12) are as follows:

Table 6. Estimation Results of Regressions (11) and (12)

Risk Governance Structure Var.: SBMF					
Regression (11)			**Regression (12)**		
DependentVar.: ROA	**Coef**	**Pr(>|z|)**	DependentVar.: SPI	**Coef**	**Pr(>|z|)**
Lag(ROA)	0.072	0.817	Lag(SPI)	2.294	**0.055.**
Zscore	0.011	**0.001****	Zscore	0.016	0.476
NPF	-0.682	0.191	NPF	9.022	**<2.2e-16*****
DROA	-3.373	0.522	DROA	-77.351	0.100
Zscore*SBMF	-0.0004	**0.093.**	Zscore* SBMF	-0.0004	0.593
NPF* SBMF	0.031	0.450	NPF* SBMF	-0.080	**0.001****
DROA* SBMF	0.119	0.780	DROA* SBMF	6.210	**0.077.**
Ln(BAAG)	-0.018	**0.007****	Ln(BAAG)	-0.069	0.425
Ln(BASI)	0.004	**0.057.**	Ln(BASI)	-0.067	0.232
Sargan test (p-value)		0.999	Sargan test (p-value)		0.980
AR2 test (p-value)		0.455	AR2 test (p-value)		0.179
Remarks: ".": significant at 10% confidence level "**": significant at 1% confidence level "*": significant at 5% confidence level "***": significant at 0.1% confidence level					

The table above, Table 6, illustrates the estimation results of regressions (11) and (12). Both regression results are evaluated to have valid and consistent instruments, reflected by the Sargan test p-value > 5%, 0.999, and 0.980, respectively, and the 2nd autocorrelation test p-value > 5%, 0.455, and 0.179, respectively.

Based on the above results, support is obtained for hypotheses 6a and 6b as regressions (11) and (12) show that the significant impact of the Sharia Supervisory Board meeting frequency moderation strengthens the implementation of risk management on Islamic banks' financial and social performance.

The Moderating Effect of External Audit Quality

Panel data processing using the System GMM method has been conducted to test hypotheses 7a and 7b. The processing results on regressions (13) and (14) are as follows:

Table 7. Estimation Results of Regressions (13) and (14)

Risk Governance Structure Var.: EXAQ					
Regression (13)			**Regression (14)**		
DependentVar.: ROA	**Coef**	**Pr(>|z|)**	DependentVar.: SPI	**Coef**	**Pr(>|z|)**
Lag(ROA)	0.128	0.288	Lag(SPI)	0.562	0.736
Zscore	0.002	0.434	Zscore	0.0007	0.972
NPF	-0.414	**0.084.**	NPF	-2.715	0.619
DROA	-2.252	**0.003****	DROA	-13.266	**0.067.**
Zscore*EXAQ	0.004	**0.042***	Zscore* EXAQ	-0.009	0.729
NPF* EXAQ	0.038	0.940	NPF* EXAQ	9.733	0.416
DROA* EXAQ	0.289	0.847	DROA* EXAQ	12.135	**0.0009*****
Ln(BAAG)	-0.007	**0.039***	Ln(BAAG)	0.054	0.644
Ln(BASI)	0.003	**0.037***	Ln(BASI)	0.023	0.718
Sargan test (p-value)		0.989	Sargan test (p-value)		1.000
AR2 test (p-value)		0.513	AR2 test (p-value)		0.123
Remarks: ".": significant at 10% confidence level "**": significant at 1% confidence level "*": significant at 5% confidence level "***": significant at 0.1% confidence level					

The regression estimates in Table 7 above depict the results of equations (13) and (14). Both regression outcomes are deemed to possess valid and consistent instruments, as indicated by the Sargan test p-values exceeding 5%, which are 0.989 and 1.000, respectively, and the p-values of the 2nd autocorrelation test exceeding 5%, standing at 0.513 and 0.123 respectively.

Based on the results mentioned earlier, hypotheses 7a and 7b, wherein the significant moderating influence of external audit quality strengthens the implementation of risk management, affecting Islamic banks' financial and social performance, are supported.

The Moderating Effect of the Index of Risk Governance Structure Effectiveness

Panel data processing using the System GMM method has been conducted to test hypotheses 8a and 8b. Table 8 illustrates the estimation results of regressions (15) and (16). Both regression results are assessed to have valid and consistent instruments, as reflected by the Sargan test p-values > 5%, which are 0.999 and 1.000, respectively, and the 2nd autocorrelation test p-values > 5%, which are 0.523 and 0.655, respectively.

Table 8. Estimation Results of Regressions (15) and (16)

Risk Governance Structure Var.: RGEI					
Regression (15)			**Regression (16)**		
DependentVar.: ROA	Coef	Pr(>|z|)	DependentVar.: SPI	Coef	Pr(>|z|)
Lag(ROA)	0.250	0.213	Lag(SPI)	0.944	**0.039***
Zscore	0.015	**0.0006***	Zscore	-0.037	0.518
NPF	-0.107	0.957	NPF	-0.955	0.897
DROA	-2.728	0.571	DROA	8.586	0.894
Zscore*RGEI	-0.002	**0.086.**	Zscore* RGEI	0.009	0.407
NPF* RGEI	0.046	0.934	NPF* RGEI	0.156	0.948
DROA* RGEI	0.217	0.845	DROA* RGEI	-2.401	0.869
Ln(BAAG)	-0.010	**0.010***	Ln(BAAG)	0.013	0.797
Ln(BASI)	0.001	0.242	Ln(BASI)	0.003	0.844
Sargan test (p-value)		0.999	Sargan test (p-value)		1.000
AR2 test (p-value)		0.523	AR2 test (p-value)		0.655
Remarks: ".": significant at 10% confidence level "*": significant at 5% confidence level			"**": significant at 1% confidence level "***": significant at 0.1% confidence level		

Regression (15) results indicate that overall risk management implementation significantly affects the financial performance of Islamic banks. Regression (15) also demonstrates that the moderating effect of the index of risk governance structure effectiveness significantly strengthens the implementation of risk management on the financial performance of Islamic banks due to increased cautious behavior. However, creating an effective risk governance structure requires organizational completeness, such as audit committees, provision of financial and audit experts, maintaining the independent proportion

of audit committees, and competent external audit implementation, thus incurring costs that affect the resilience of Islamic bank stability. Regression (16) results show that the moderating effect of the index of risk governance structure effectiveness is not significant in implementing risk management on the social performance of Islamic banks. Based on the above results, support is only obtained for hypothesis 8a statement, where the moderating effect of the index of risk governance structure effectiveness significantly reinforces risk management on the financial performance of Islamic banks.

CONCLUSION

Based on the research findings discussed in the previous chapter regarding the moderation effect of risk governance structure on risk management towards the financial and social performance of Islamic banks, the following conclusions can be drawn: Firstly, the number of audit committee members does not significantly affect the effectiveness of risk management implementation on the financial performance of Islamic banks, but it does significantly strengthen the effectiveness of risk management on their social performance. Secondly, the independence of the audit committee significantly enhances the effectiveness of risk management implementation on the financial and social performance of Islamic banks. Thirdly, the proportion of expertise within the audit committee significantly reinforces the effectiveness of risk management implementation on the financial performance of Islamic banks, albeit it does not influence the effectiveness of their social performance. Fourthly, the frequency of audit committee meetings significantly enhances the effectiveness of risk management implementation on the financial performance of Islamic banks while not affecting social performance. Fifthly, the number of Sharia Supervisory Board members significantly strengthens the effectiveness of risk management implementation in terms of both financial and social performance. Sixthly, the frequency of Sharia Supervisory Board meetings significantly enhances the effectiveness of risk management implementation in terms of both financial and social performance. Seventhly, the quality of external audits significantly reinforces the effectiveness of risk management implementation on both financial and social performance. Lastly, the effectiveness of the risk governance structure only significantly enhances the effectiveness of risk management implementation on the financial performance of Islamic banks without impacting their social performance.

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REFERENCES

Alsharif, M. (2021). Risk, efficiency, and capital in a dual banking industry: evidence from GCC banks. *Managerial Finance*, *47*(8), 1213–1232.

Hanggraeni, D. (2019). *Manajemen Risiko Pembiayaan Syariah*. IPB Press.

Jallali, S., & Zoghlami, F. (2022). Does risk governance mediate the impact of governance and risk management on banks' performance? Evidence from a selected sample of Islamic banks. *Journal of Financial Regulation and Compliance*, *30*(4), 439–464.

Jorion, P. (2011). *Financial Risk Manager Handbook FRM Part I/Part II* (6th ed). John Wiley & Sons.

Laeven, L., & Levine, R. (2009). Bank Governance, Regulation and Risk Taking. *Journal of Financial Economics*, *93*, 259–275.

Nguyen, Q. K. (2020). Ownership structure and bank risk-taking in ASEAN countries: A quantile regression approach. *Cogent Economics & Finance*, *8*.

Nguyen, Q. K., & Dang, V. C. (2022). The impact of risk governance structure on bank risk management effectiveness: evidence from ASEAN countries. *Heliyon*, *8*.

Nugraheni, P. (2018). Sharia supervisory board and social performance of Indonesian Islamic banks. *Jurnal Akuntansi Dan Auditing Indonesia*, *22*(2).

Srairi, S., Bourkhis, K., & Houcine, A. (2022). Does bank governance affect risk and efficiency? Evidence from Islamic banks in GCC countries. *International Journal of Islamic and Middle Eastern Finance and Management*, *15*(3).

Tarazi, A., & Abedifar, P. (2022). Special issue on Islamic banking: Stability and governance. *Global Finance Journal*, *51*.

Tashkandi, A. (2022). Shariah supervision and corporate governance effects on Islamic banks' performance: evidence from the GCC countries. *Journal of Business and Socio-Economic Development*.

Zeineb, G. B., & Mensi, S. (2017). Corporate governance, risk and efficiency: evidence from GCC Islamic banks. *Managerial Finance*, *44*(5).