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Determinants of Islamic banking value: Financial performance as a mediation

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Abstract

Research aims: The objective of this research is to test and empirically prove what factors have the most influence on the performance of Islamic banking so that they can take appropriate action policies to increase the competitiveness and value of the company in the market.

Design/Methodology/Approach: Quantitative methodology with secondary data from 102 data samples is used. The data is panel data and processed with views. Hypothesis testing is used to determine the effect of intellectual capital, corporate governance, maqashid sharia index (MSI), and enterprise risk management (ERM) on financial performance. Mediation tests to determine financial performance mediate intellectual capital, corporate governance, MSI, and corporate risk management on Islamic banking value.

Research findings: Financial performance has not been able to mediate the relationship between intellectual capital, corporate governance, MSI, and ERM in relation to the value of Islamic banking.

Theoretical contribution/Originality: This study extends previous research on factors that can increase the value of Islamic banking in Indonesia by using ERM, which has not been widely studied in Indonesia.

Practitioner/Policy implication: This study provides important insights into which areas need to be improved or further evaluated to enhance future corporate performance and the value of Islamic banking.

Research limitations/Implications: There is a possibility that important variables that can affect the results, such as external economic or political factors, are not controlled in this study. It is hoped that further research will use a wider sample and a longer observation period so that research findings can generalize the results of research on financial performance and company value.

Keywords: Corporate Governance; Corporate Risk Management; Intellectual Capital; Maqashid Sharia Index

Introduction

The world economy is currently undergoing a substantial and ongoing shift, with a particular emphasis on the field of Islamic finance (Rahmadi & Mutasowifin, 2021). The global Islamic finance industry has made substantial progress in recent years, With the enactment of Law. 21. 2008, which established the legal framework for Islamic banks, the Indonesian banking industry has grown significantly (Hosen et al., 2019). Financial organizations that uphold Islamic principles and teachings are known as Islamic banks. Compliance with Islamic law places restrictions on funding projects that are contrary to Sharia rules, as well as on transactions

containing interest (*riba*) and speculative activities (*gharar*) (Sueb et al., 2022). The distinctive characteristics of Islamic banks give rise to several perspectives for assessing their performance, which are tailored to certain categories of financial institutions.

However, to maintain and improve competitiveness, Islamic banking must be able to provide optimal financial performance (Adiwijaya et al., 2023). Financial performance is one of the main indicators for assessing the success of a bank, including Islamic banking. Good performance can increase the value of the bank in the eyes of stakeholders, such as investors, customers, and banking authorities. Weak financial performance can reduce trust and hinder the development of Islamic banking. Internal factors can affect the financial performance and value of the bank, such as corporate governance, intellectual capital, Maqashid Sharia Index (MSI), and Enterprise Risk Management (ERM), to assess the success of financial performance. Therefore, it is possible to evaluate the extent to which the achievements of Islamic banks are in accordance with the overall objectives of Sharia.

The Islamic banking industry in Indonesia has grown as a result of the general understanding of the importance of complying with Sharia law in conducting financial operations. Based on information from the Financial Services Authority (FSA) in 2022, there were 168 Islamic Rural Banks that started their business activities in Indonesia in 2020. Overall, there are 20 Sharia Business Units and 14 Sharia Commercial Banks. The development of Sharia banking resources in Indonesia is a real manifestation of the progress of this industry. Compared to the previous year, Islamic banks in Indonesia experienced a significant increase in assets, reaching a value of around IDR 508 billion in 2019. The combined assets of Islamic banks in Indonesia reached IDR 534.3 trillion in June 2020, indicating a growth rate of 5.18% compared to the end of 2019.

The urgency or crucial problem in this study is how Islamic banks face pressure from shareholders and market players who increasingly demand transparency and compliance with Islamic principles (Arianty et al., 2023). They question organizational values, investment decisions, and cultural differences between Islamic banks and conventional banks. The main challenge for Islamic banks is to maintain a balance between improving financial performance and consistency with Islamic principles. Islamic principles themselves can strengthen customer trust and security, but banks also need to improve operational efficiency. Therefore, performance measurement is an important tool for management to evaluate the effectiveness of previous policies and formulate future strategies. This information is also important for investors in assessing the company's future prospects (Firman et al., 2023).

This study aims to address the research gap identified by Dwianto et al. (2024) examining and empirically testing the factors that most significantly influence the performance of Islamic banking. The goal is to identify key determinants that can guide appropriate policy actions to enhance competitiveness and increase firm value in the market. The novelty of this study lies in the inclusion of Enterprise Risk Management (ERM) as a key variable. ERM is considered to play a strategic role by integrating risk management with financial performance and value creation. It offers a systematic approach to evaluating how

financial performance contributes to the value of Islamic banks, while also improving operational efficiency, transparency, and competitiveness. This study remains relevant and more comprehensive compared to prior research, as it provides strategic recommendations for Islamic banks to increase firm value through improved financial performance and optimal risk management practices. Furthermore, the study builds on the findings of Fajriah and Ghozali (2022), which revealed inconsistent results—specifically, that ERM did not significantly affect the value of Islamic banks. These inconsistencies highlight a significant research gap that this study seeks to explore and clarify.

In addition, this study also shows how the role of financial performance as a mediating variable to show the factors that influence the value of the company does not work directly but through the mechanism of improving financial performance first before having an impact on the value of Islamic banking and can provide a good contribution to the company to increase the company's trust in the eyes of stakeholders, Islamic banks that have good financial performance are able to provide economic value while maintaining compliance with sharia principles, and the role of the MSI is an instrument that is widely used to evaluate a company's compliance with the principles of maqashid sharia throughout its operational range (Hosen et al., 2019; Praptiningsih et al., 2022; Wira et al., 2018).

The idea of maqashid sharia places significant emphasis on achieving the main goals within the Islamic framework, which include maintaining religion, spiritual well-being, descendants, reason, and material wealth (Toha et al., 2021). Zailani et al. (2022) stated that this rule is of significant importance for organizations in the management and operations of their companies. Compliance with the principles of maqashid sharia has the potential to increase consumer and investor confidence, thus having a positive impact on stock prices and business reputation (Sueb et al., 2022).

Therefore, this study aims to answer the suggestions of previous studies to add more comprehensive variables that can help managers related to the increasingly difficult challenges of Islamic banks so that with good financial performance, stakeholders can take the right policies to increase the competitiveness and value of the company in the market. This study is expected to help bank managers understand what factors have the most influence on bank value so that they can adopt the right policies to increase the competitiveness and value of the company in the market. With the increasingly tight competition in the banking industry, especially with the digitalization and demands for innovation, this study is very important to support the growth of Islamic banking in Indonesia. Research that examines the contribution of financial performance to the value of Islamic banks is expected to provide strategic recommendations for banks to continue to grow and compete in the global market.

Literature Review and Hypotheses Development

Agency theory

The idea of agency theory explains the interaction between the principal, who is the owner, and the agent, who is the manager. The principal authorizes the agent to act on their behalf, but the agent may not consistently prioritize the best interests of the principal. This phenomenon can occur because the agent has better knowledge of the organization and is motivated by self-interest. The concept of agency theory based on Jensen and Meckling (1976) is that the gap between ownership and control in a company can create agency problems. Principals, as owners, may face limitations in directly supervising the actions of their agents, the managers. As a result, they may face challenges in consistently maintaining their interests. Agent difficulties can give rise to various costs, including costs related to monitoring, inhibition, and contracting. Monitoring costs refer to the costs incurred by the principal to monitor and supervise the actions and performance of the agent. Inhibition costs refer to the costs incurred by an individual or entity to refrain from engaging in opportunistic behavior. Contracting costs refer to the costs incurred by the principal and agent during the process of negotiating and reaching an agreement on a contract (Dwianto et al., 2024).

Stakeholder theory

From the perspective of stakeholder theory, Islamic banking values—such as justice, trustworthiness, and social responsibility—encourage bank management to prioritize not only shareholder profits but also the welfare of all stakeholders, including customers, employees, regulators, and the broader community. These values help foster harmonious relationships, build trust, and increase stakeholder loyalty, which in turn positively affects financial performance. Financial performance then serves as a mediating variable, linking the internalization of Islamic values to the achievement of strategic goals and the long-term sustainability of Islamic banks (Setiadi, 2020).

The Influence of Intellectual Capital on Financial Performance

Stakeholder theory explains the relationship between a company and various parties interested in the company's activities, such as shareholders, employees, customers, suppliers, the community, and even regulators. In the context of the influence of intellectual capital (IC) on a company's financial performance, this theory is very relevant because IC (which consists of human capital, structural capital, and relational capital) influences how a company interacts with and meets the needs of its stakeholders.

IC includes the information, skills, and expertise possessed by bank employees, as well as their relationships with clients and business partners (Aziz & Hashim, 2017). Initially, skilled and knowledgeable staff can improve the bank's operational efficiency, reduce costs, and improve customer service (Ma'auyah & Tjahjani, 2021). In addition, improving products and services driven by staff knowledge and creativity can help attract more

consumers and increase bank revenues. Third, the bank's reputation can be improved through positive interactions with the community and customers (Cahya et al., 2022).

H₁: IC influence on financial performance.

The Influence of Corporate Governance on Financial Performance

The Sharia Supervisory Board is one of the many stakeholders in a bank that is subject to the provisions of the corporate governance framework (Kismawadi, 2023). The Sharia Supervisory Board is a group responsible for ensuring that Islamic banks follow sharia principles and maintain high ethical standards in their operations. They have an important role in overseeing bank activities, evaluating risks, and ensuring that banks function fairly and transparently (Afiska et al., 2021).

Agency theory states that conflicts can arise between shareholders and bank management, as managers may be motivated to prioritize their interests over those of the owners. To reduce conflicts of interest and ensure that bank management complies with sharia principles and the interests of shareholders, Islamic banks use a sharia supervisory board (Meslier et al., 2020).

H₂: Corporate governance influence on financial performance.

The Influence of Maqashid Sharia Index on Financial Performance

In stakeholder theory, Islamic banks are considered accountable to various stakeholders, including customers, society, regulators, and the government. The implementation of maqashid sharia that banks focus on the interests of all stakeholders, which can create long-term value and trust from society and investors. Maqashid sharia acts as a source of core values that shape organizational behavior, business strategies, and policy directions of Islamic banks.

When maqashid sharia is applied consistently in bank operations, it will be reflected in decisions that are more ethical, fair, and oriented towards the benefit of all stakeholders (Hudaefi & Badeges, 2022). The theoretical implication of Islamic bank compliance with the MSI is that the implementation of Islamic principles can increase customer trust and loyalty, as well as strengthen the bank's reputation in society (Ahsan & Qureshi, 2022). In addition, Islamic banks that are more compliant with the MSI tend to experience sustainable growth, as this strengthens their integrity in an increasingly competitive market. The MSI has been shown to have a significant and positive impact on accounting-based performance (Setiadi, 2020). It is considered more comprehensive to represent bank performance based on Islamic principles by using the MSI technique (Mukhibad et al., 2022).

H₃: MSI influence on financial performance.

The Influence of Enterprise Risk Management on Financial Performance

Stakeholder theory states that companies are responsible not only to shareholders but also to various parties who have an interest in the company's operations, such as employees, customers, suppliers, and the community. Effective risk management can strengthen relationships with stakeholders because good risk management will show that the company cares about its sustainability and stability.

With ERM, companies can ensure that risks that can harm stakeholders (such as financial losses, reputational damage, or customer dissatisfaction) can be minimized. It strengthens stakeholder trust, which in turn can improve financial performance by increasing the company's reputation, customer loyalty, and investor confidence. ERM is essential for Islamic banks' efforts to manage risk efficiently while maintaining sharia compliance. This research is in line with research conducted by (Mcshane, 2018).

H₄: ERM influence on financial performance.

The Influence of Financial Performance on Islamic Banking Value

Stakeholders are important in evaluating the success of Islamic banks because they are the ones affected by the bank's choices and activities (Setiadi, 2020). The value of Islamic banks is benefited by the strong performance of Islamic banks, as measured by the financial metric return on assets (ROA). Strong financial results, they argue, indicate that banks can generate high profits and manage risks well, which increases the perception of the company's value among stakeholders (Mukhibad et al., 2022). Therefore, it is important to understand how the performance of Islamic banks affects the value of these banks while managing them in accordance with Islamic principles.

H₅: Financial performance influences on islamic banking value.

The Mediation Role of Financial Performance on Intellectual Capital, Corporate Governance, MSI, and ERM Towards Islamic Banking Value

Stakeholder theory emphasizes the need for Islamic banks to pay attention to the interests of all stakeholders. Agency theory highlights the conflict of interest between shareholders and management (Setiadi, 2020). Islamic bank performance reflects operational efficiency, compliance with sharia principles, and transparency.

Through mediation, Islamic bank performance becomes an important indicator of how banks utilize intellectual assets, maintain good governance, and manage risks while still considering the interests of all stakeholders. Regarding the direct impact of IC on Islamic banking value, IC is also indirectly influenced by firm value through profitability ratios such as ROA (Qoda'ah & Abdurrahman, 2023).

With profitability acting as a mediator, this study will look at how revenue diversification and IC affect Islamic banking value. Previous research has shown that profitability can act as a mediator between IC and firm value. Firm value can be reflected in the company's stock price. The better the stakeholder response, the better the firm's value (Aziz & Hashim, 2017; Pratiwi & Chariri, 2021). One of the company's important assets in supporting company activities to encourage increased performance and company value is in the form of IC. The finding that IC affects profitability and firm value as a mediator was obtained (Natsir & Bangun, 2021; Ariyani & Wirakusuma, 2018). The performance of Islamic banks can mediate the relationship between ERM and the value of Islamic banks. This implies that the performance of Islamic banks can offset the influence of ERM on their value, so effective risk management is needed to increase the value of Islamic banks (Mcshane, 2018). Therefore, to improve the overall performance and value of Islamic banks, industry practitioners, regulators, and researchers can benefit greatly from understanding the mediating role played by Islamic bank performance in the relationship between ERM and value in Islamic banks (Stolzle & Xu, 2018).

Basically, support related to the role of performance as a mediator between IC, corporate governance (CG), MSI, and ERM towards the value of Islamic banks still experiences a gap in the literature. Therefore, this study is formulated as a promising innovative step in exploring aspects of novelty related to Islamic banks.

H_{6a}: Financial performance mediates IC on islamic banking value.

H_{6b}: Financial performance mediates CG on islamic banking value.

H_{6c}: Financial performance mediates the MSI on islamic banking value.

H_{6d}: Financial performance mediates ERM on islamic banking value

Research Method

Population and Sample

The population in this study is Islamic commercial banks in Indonesia. The population of this study was determined through purposive sampling, which is a data collection method that includes certain variables. This study use secondary data collected by researchers from intermediary sources. Islamic commercial banks provide secondary data used in this study. The data used in this study comes from the official website of Islamic commercial banks in Indonesia.

Table 1 Sample Size

Research Criteria	Amount
Indonesian Islamic Commercial Banks 2015-2023.	12
The company does not use rupiah currency in its 2015-2023 annual reports	(0)
The company did not publish annual reports from 2015-2023.	(0)
Number of observation samples (9 years)	108
Outlier data	(6)
Total Sample	102

Table 1 presents the details of the number of samples used in this study. This study focuses on 12 Islamic commercial banks operating in Indonesia during the period 2015 to 2023. The selection was based on the availability of annual reports and the use of the rupiah currency in financial reporting. From a total of 108 observation data (12 banks × 9 years), a screening process was carried out to identify and remove outlier data that could potentially affect the validity of the analysis. After eliminating 6 outlier data, the total number of valid samples for analysis was 102 observations.

Definition Operational and Measurement of Variables

Table 2 Operational definitions and measurement of variables usually serves to systematically explain how each variable in the study is defined and measured. This table is important to ensure consistency in data collection and analysis.

Table 2 Operational Definitions and Measurement of Variables

Variables	Operational Definition	Measurement
Islamic Banking Values (NP)	A set of values and principles that underlie the operations of Islamic banking, which are based on Islamic teachings and maqashid sharia.	$\frac{\text{Market Value of Shares per Share}}{\text{Book Value per share}}$ (Manurung et al., 2022)
Intellectual Capital (IC)	Intangible assets owned by an organization that originate from the knowledge, skills, and competencies possessed by human resources, organizational structure, and strategic external relationships.	$VACA + VAHU + STVA$ VACA : (Value Added Capital Employed) VAHU: (Value Added Human Capital) STVA: (Structural Capital Value Added) (Nasution & Haryono, 2023)
Corporate Governance (CG)	A system and mechanism that regulates and controls companies to create accountability, transparency and protection of the interests of stakeholders.	Size of the Sharia Supervisory Board under the management of Islamic commercial banks. (Nomran & Haron 2020). Total number of scholars on the SSB of the islamic banking at the end of each year

Table 2 Operational Definitions and Measurement of Variables (Cont.)

Variables	Operational Definition	Measurement
Maqashi Sharia Index (MSI)	A measure of the level of implementation of the principles of maqashid sharia by Islamic financial institutions, especially Islamic banks, in achieving sharia objectives (maqashid al-shariah) which include: maintaining religion (din), soul (nafs), reason ('aql), descendants (nasl), and property (mal).	Advancement of Knowledge
		$\frac{\text{Education fee}}{\text{Total fee}} \times 100\%$
		Implementation and Improvement of new skills
		$\frac{\text{Research Cost}}{\text{Total Cost}} \times 100\%$
		Realizing Awareness of Islamic Banking
		$\frac{\text{Training Cost}}{\text{Total Cost}} \times 100\%$
		Fair Return
		$\frac{\text{Promotion Cost}}{\text{Total Cost}} \times 100\%$
		Affordable Products and Services
		$\frac{\text{Investment benefit}}{\text{Net income investment}} \times 100\%$
		Eliminate indefinite – indefinite negative that can create unfair
		$\frac{\text{Cost of mudharabah/musyarakah}}{\text{Total financing}} \times 100\%$
		Bank Profitability
		$\frac{\text{Income interest} - \text{free}}{\text{Total income}} \times 100\%$
		Retribution Income and Welfare
		$\frac{\text{Net profit}}{\text{Total Assets}} \times 100\%$
		Investment in Real Sector
		$\frac{\text{Net Zakat Assets}}{\text{Distribution investment}} \times 100\%$
Enterprise Risk Management (ERM)	An integrated and comprehensive process of identifying, assessing, managing, and monitoring risks that can impact the achievement of organizational goals.	ERM Each disclosure item is given a dummy value of 1 if the ERM item is disclosed and 0 if the ERM item is not disclosed. Each value is then summed and divided by 108 (total ERM disclosure items) (Hakim & Suardi 2023)
Financial Performance (FP)	The ability of a company, especially a bank, to produce efficient, profitable and sustainable financial performance in a certain period.	ROA (Jarwani et al., 2024) $\frac{\text{Profit before tax}}{\text{Total Assets}} \times 100\%$

Data Analysis Method

Since the data used in this study are panel data, an appropriate method is needed to estimate the parameters of the data. The process of selecting the right method begins with conducting the Chow test (to choose between Common Effect Model/CEM or Fixed Effect Model/FEM), the Lagrange Multiplier test (to decide between CEM or Random Effect Model/REM), and the Hausman test (to determine whether FEM or REM is more appropriate). After that, the classical assumption test is carried out. A regression equation using the least squares method is considered the optimal regression line (Best Linear Unbiased Estimator) if it meets the four assumptions evaluated through the normality

test, multicollinearity test, heteroscedasticity test, and autocorrelation test. On the other hand, a regression equation using the general least squares method usually involves variable transformation to ensure that the error variance remains consistent (homoscedastic) and to eliminate autocorrelation.

The regression analysis is further expanded by conducting additional tests, including the coefficient of determination test, the goodness-of-fit test, and the t-test. The coefficient of determination test provides insight into how effectively the model can represent the original data. The goodness-of-fit test assesses whether the independent variables. There are two regression models in this study:

$$FP = a + \beta_1 IC + \beta_2 CG + \beta_3 MSI + \beta_4 ERM + \varepsilon \dots (1)$$

$$NP = a + \beta_1 IC + \beta_2 CG + \beta_3 MSI + \beta_4 ERM + \beta_5 FP + \varepsilon \dots (2)$$

Equation (1) represents a regression model used to analyze the influence of several independent variables on FP. The independent variables include IC, CG, MSI, and ERM. The regression coefficients (β_1 to β_4) indicate the magnitude of each variable's contribution to changes in financial performance, with a as the constant and ε as the error term.

Equation (2) extends the previous model by incorporating FP as a mediating variable between IC, CG, MSI, and ERM on NP. By including FP in the equation, the model examines whether the effect of the independent variables on firm value occurs directly or indirectly through financial performance. The addition of coefficient β_5 for FP reveals whether financial performance plays a mediating role in bridging the internal factors of the company to its market-based valuation.

Result and Discussion

The results of descriptive statistics in this study, which uses 102 research data, are to provide an overview of the variables. The Table 3 displays the findings of descriptive statistical testing.

Table 3 Descriptive Statistics Results

Variable	Observation	Min	Max	Mean	S.D.
IC	102	1.3429	7.1902	3.5322	1.2817
CG	102	2.0000	4.0000	2.3333	0.7490
MSI	102	0.1551	0.5981	0.2661	0.0622
ERM	102	0.8056	0.9177	0.8615	0.0339
FP	102	-0.1085	0.1358	0.0127	0.0414
NP	102	0.3686	4.9141	1.7536	1.2526

Note: IC = Intellectual Capital; CG = Corporate Governance; MSI = Maqashid Sharia Index; ERM = Enterprise Risk Mangement; FP = Financial Performance; NP = Islamic Banking Value.

The intellectual capital (IC) variable has an average value of 3.5322 with a standard deviation of 1.2817. The corporate governance (CG) variable has an average value of 2.3333 with a standard deviation of 0.7490. The MSI variable has an average value of 0.2661 with a standard deviation of 0.0622. The ERM variable has an average value of 0.8615 with a standard deviation of 0.0339. The financial performance (FP) variable has an average value of 0.0127 with a standard deviation of 0.0414. The Islamic banking value (NP) variable has an average value of 1.7536 with a standard deviation of 1.2526.

Model Estimation Evaluation Result

Three steps in the evIEWS program for the hypothesis testing process determine how well the research model fits the data. Based on the Table 4 it can be concluded that FEM is more appropriate to estimate model 1, while REM is more appropriate to estimate model 2.

Table 4 Model Evaluation Test Result

Effect Test	Model 1	Model 2
<i>Chow Test</i>		
Cross section F	0.0226	0.0000
<i>Hausman Test</i>		
Random cross-section	0.0315	0.4938
<i>Breusch's pagans</i>		
Cross section		0.0000

Classical Assumption Test

The best selection of model 2 is REM, then using the classical assumption test, namely the Heteroscedasticity test and the Multicollinearity test (Napi Tupulu et al., 2021). Table 5 show that the probability values of all variables are > 0.05, which means that this regression model is free from heteroscedasticity problems.

Table 5 Heteroscedasticity Test Result

Variables	Model 2		
	Coefficient	t-statistics	Prob.
C	0.1132	1.7029	0.0922
IC	0.0027	1.2849	0.2022
CG	-0.0039	-0.9865	0.3266
MSI	-0.0627	-1.3229	0.1894
ERM	-0.0877	-1.1235	0.2643

Moreover, the results of the multicollinearity test show that the correlation value between variables is < 0.8 (Table 6), which means that this regression model is free from multicollinearity problems.

Table 6 Multicollinearity Test

	IC	CG	MSI	ERM
IC	1.0000	0.1999	0.1159	-0.2052
CG	0.1999	1.0000	-0.0541	-0.1018
MSI	0.1159	-0.0541	1.0000	-0.0813
ERM	-0.2052	-0.1018	-0.0813	1.0000

Hypothesis Testing

Table 7 examine the path coefficients that display the statistical significance value of t and parameter coefficients to test hypotheses. The criteria for accepting and rejecting the proposed hypothesis is using a probability of 0.05.

The results of the hypothesis test in Table 7, the path coefficient of model 1, show that the following variables were found to have significant statistical differences: First, IC on FP (H_1) is not supported because the prob. value of 0.6288 and a t-statistic value of 0.4851. *Second*, The CG variable on FP obtained a t-statistic of -1.1166 and a prob. value of 0.2673; concluding that H_2 is not supported. *Third*, The MSI variable on FP obtained a t-statistic of 1.3586 and a prob. value of 0.1778; concluding H_3 is not supported. *Fourth*, The ERM variable on FP obtained a t-statistic of 1.3983 and a prob. value of 0.1656; concluding that H_4 is not supported. *Fifth*, The influence of FP on NP obtained a t-statistic value of 2.1549 and a p-value of 0.0337; concluding H_5 is supported.

Table 7 Path Coefficient Hypothesis Test Results

Variables	Model 1			Model 2		
	Coef	t-statistic	Prob.	Coef	t-statistic	Prob.
C	-0.1824	-1.4689	0.1455	-4.4587	-1.5832	0.1167
IC	0.0019	0.4851	0.6288	-0.1146	-1.3312	0.1863
CG	-0.0083	-1.1166	0.2673	0.0298	0.1887	0.8507
MSI	0.1204	1.3586	0.1778	5.8571	3.0414	0.0030
ERM	0.2039	1.3983	0.1656	5.7342	1.7653	0.0807
FP				5.2257	2.1549	0.0337
Adj. R-squ		0.1528			0.1792	
R-squared		0.2786			0.2198	
F-statistic		2.2144			5.4108	
Prob. F-sta		0.0114			0.0001	

Note: IC = Intellectual Capital; CG = Corporate Governance; MSI = Maqashid Sharia Index; ERM = Enterprise Risk Mangement; FP = Financial Performance; NP = Islamic Banking Value.

The adjusted r-squared value of model 1 is 0.1528, meaning that IC, CG, MSI, and ERM are able to explain the financial performance variable by 15.28%, while other variables explain the remaining 84.72%. The square value of model 2 is 0.1792, which means that the independent variable contributes 17.92% to the company's value, and other factors contribute 82.08% to the company's value.

The statistical value of Prob. F model 1 is 0.0114, which means that IC, CG, MSI, and ERM simultaneously influence financial performance. Meanwhile, the statistical value of Prob.

F model 2 is 0.0001, which means that IC, CG, MSI, ERM, and FP simultaneously influence NP.

Sobel Test

The Sobel Test is used to examine the significance of a mediating variable's effect in the relationship between an independent variable and a dependent variable. The Sobel Test is applied to determine whether financial performance significantly mediates the relationship between IC, CG, MSI, and ERM on NP. This test is viewed using the output results from the Sobel test.

Table 8 shows that IC does not have a mediating effect on NP because the p-value is 0.6358 (H_{6a} is not supported). Moreover, p-value of 0.3214 on indicates that FP does not mediates the relationship between CG and FP (H_{6b} is not supported). The MSI variable also shows a p-value of 0.2504, indicates that FP does not have a mediating effect on the relationship between MSI and NP (H_{6c} is not supported). The p-value of 0.2407 for ERM variable also indicates that FP does not act as a mediator between ERM and Islamic banking values (H_{6d} is not supported).

Table 8 Sobel Test Results

Variables	T-statistics	Std. Error	P Value
IC -> FP -> NP	0.4734	0.0209	0.6358
CG -> FP -> NP	-0.9914	0.0437	0.3214
MSI -> FP -> NP	1.1493	0.5473	0.2504
ERM -> FP -> NP	1.1730	0.9087	0.2407

The Influence of Intellectual Capital on Financial Performance

The results of the hypothesis test show that IC does not affect FP. It is means that there is no convincing relationship between intellectual capital and financial performance. It is because the operational activities of companies in Indonesia are still dominated by the use of physical and financial assets to improve financial performance.

Management strategies may be more focused on regulatory compliance and network expansion than on optimizing physical assets. Thus, even though Islamic banking has IC, such as reliable human resources, innovative internal processes, or a good reputation (relational capital), its contribution to financial performance has not been measured in real terms. These results indicates that intellectual capital is not yet an asset that can drive profitability in a company (Poh et al., 2018; Pratiwi & Chariri, 2021).

The Influence of Corporate Governance on Financial Performance.

The results of the study indicate that CG does not have a significant effect on FP. This finding indicates that the implementation of corporate governance by Islamic banks through the Sharia Supervisory Board has not succeeded in increasing profitability. The lack of effectiveness in supervision, especially in achieving profit, is thought to be due to

the limited composition of the Sharia Supervisory Board. Ideally, CG should provide the right incentives to management to achieve corporate goals and shareholder interests.

The conflict of interest between shareholders and management can be seen through the lens of agency theory. It is due to differences in interests between management that implement Sharia corporate governance and shareholders who may prioritize achieving optimal financial performance. This result is consistent with the findings of Buallay (2019) and Adiwijaya et al. (2023), who also concluded that the Sharia Supervisory Board does not influence Sharia performance.

The Influence of the Maqashid Sharia Index on Financial Performance

The impact of the MSI on financial performance was tested for its hypothesis. Thus, it can be said that the MSI has no real impact on FP. Islamic banking tends to have different conditions and company goals that are not only oriented towards profit but are more aimed at providing benefits to many parties and improving community welfare according to Sharia principles. MSI emphasizes spiritual and social dimensions, while financial performance indicators emphasize efficiency and profitability. Banks that focus on maqashid objectives may allocate resources to social activities, education, and economic justice. Thus, achieving high MSI values is not always accompanied by optimal financial performance. These results are in line with research by Campura et al. (2021) and Dwianto et al. (2024), which reveal a complex and diverse relationship between external market conditions, CG and sharia processes, and the success of maqashid on financial performance.

The Influence of ERM on Financial Performance

Hypothesis test on the impact of ERM on financial performance. Therefore, it can be said that financial performance is not significantly affected by ERM. This finding indicates that ERM efforts are still unable to improve organizational performance. It may occur as a result of differences in the way Islamic banking interprets ERM, which does not affect the financial success of the business. This study is in line with the research of Gonzalez et al. (2022), which shows that ERM cannot be effective because of differences in company characteristics, such as differences in size, complexity, and business environment of the company.

The Influence of Financial Performance on Islamic Banking Values

The results of the study indicate that financial performance has a significant effect on Islamic banking value. Thus, it can be said that the value of Islamic banking is greatly influenced by its financial success. This result is supported by the research of Setiadi (2020), which shows that the strong financial performance of the company shows the capacity of management to utilize the skills and expertise of people, which increases the overall value of the company. Sofiani and Siregar (2022) also stated that the company's ability to manage its finances to maximize shareholder welfare or company value is indicated by an increase in the profit ratio determined by ROA.

Mediation Effect of Financial Performance Towards Intellectual Capital and Islamic Banking Value

The indirect impact test shows that there is no significant impact between NP, FP, and IC. It shows that financial performance does not function as a mediator between intellectual capital and Islamic banking value. This finding makes it clear that the management and improvement of current company resources are not enough to gain a competitive advantage, so they cannot satisfy stakeholders and prevent financial performance from having an indirect impact on company value. This study is strengthened by the research of Maisaroh and Nurhidayati (2021) and Ariyani and Wirakusuma (2018), that intellectual capital is a long-term investment or capital, which makes the growth of the company's financial performance less effective.

Mediation Effect of Financial Performance Towards Corporate Governance and Islamic Banking Values.

Sobel Test results show FP does not mediate the relationship between CG and NP. According to agency theory, conflicts of interest between management (agent) and shareholders (principals) can affect the effectiveness of corporate governance. In the context of Islamic banking, even though corporate governance is well implemented, financial performance may not improve due to differences in goals between management and shareholders (Fitriana et al., 2019).

The Sharia Supervisory Board plays an important role in ensuring compliance with Sharia principles, but its influence on financial performance is often limited. It is due to the lack of authority of the Sharia Supervisory Board in making strategic decisions that have a direct impact on the company's finances (Wijayanti & Setiawan, 2023).

Islamic banking has dual objectives, namely achieving financial profit and complying with sharia principles. Prioritizing Sharia compliance (such as avoiding usury and ensuring halal investment) can limit opportunities to improve financial performance. This study is in line with the study conducted by Pratama et al. (2024), which shows that financial performance does not mediate corporate governance towards Islamic Banking Values. It is because even though organizational governance is implemented well, financial performance may not improve due to the trade-off between Sharia compliance and profitability.

Mediation Effect of Financial Performance Towards MSI and Islamic Banking Value.

The indirect effect test shows that the MSI does not have a significant indirect effect on the value of Islamic banking through financial performance. It shows that financial achievement does not reduce the influence of the MSI on Islamic banking value. This result can be associated with the different characteristics and objectives of Islamic banking, which prioritize maximizing profits, providing benefits to various stakeholders, and improving community welfare with sharia principles. This result is supported by research by Dwianto et al. (2024), which states that financial performance does not act as

a mediator between the value of Islamic banking and the MSI because it is viewed from the perspective of signal theory, which assumes that the MSI is a sign of compliance with sharia principles. However, the signal from this MSI cannot have a significant effect on the value of Islamic banking.

Mediation Effect of Financial Performance Towards ERM and Islamic Banking Value.

ERM has no significant impact on Islamic banking value through FP, according to the results of the indirect effect test. It indicates that the impact of ERM on business value is not mediated by financial performance. In a mediation relationship, we expect that ERM will affect financial performance, which will then affect firm value. If financial performance does not mediate, then ERM does not have a significant effect on firm value through this channel. Since the test results show a high p-value, this indicates that even though ERM is implemented, there is no significant increase in financial performance that can increase firm value. The study is in line with research by Pratiwi and Chariri (2021), which shows that ERM has no visible indirect impact on firm value through financial performance. It may mean that the company does not manage risk effectively, so that it does not produce better financial performance. Other factors (e.g., business strategy, product innovation, or management quality) may have a greater effect on firm value than financial performance. The effect of ERM on firm value may take longer to appear, so the current analysis does not include long-term impacts.

Conclusion

In general, this study reveals that several factors such as intellectual capital, corporate governance, maqashid sharia index, and enterprise risk management do not have a significant effect on financial performance. However, the relationship between financial performance is significantly of Islamic banking values. Financial performance cannot mediate the relationship between intellectual capital, corporate governance, MSI, and corporate risk management on Islamic banking values. Financial performance cannot mediate the relationship between intellectual capital, corporate governance, maqashid sharia index, and enterprise risk management because the direction of influence of these variables on financial performance is not significant or inconsistent. This could be caused by suboptimal implementation, differences in goal orientation for example, maqashid sharia focuses more on social value than profit and the possibility of other more relevant variables as mediates, such as reputation or public trust. It is hoped that further research will use a wider sample and a longer observation period so that the research findings can generalize the results of research on financial performance and company value.

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References

- Adiwijaya, Z. A., Suprianto, E., & Rusdi, D. (2023). The Influence of Islamic Corporate Governance and Maqashid Syariah Index on Company Value with Islamic Social Reporting as a Moderating Variable. *Indonesian Interdisciplinary Journal of Islamic Economics (IIJSE)*, 6(1), 63–78. <https://www.e-journal.uac.ac.id/index.php/iijs/article/view/3135>
- Afiska, L., Handayani, D. F., & Serly, V. (2021). Pengaruh Karakteristik Dewan Pengawas Syariah (DPS) Terhadap Kinerja Keuangan Bank Umum Syariah Yang Terdaftar pada Otoritas Jasa Keuangan (OJK) Indonesia. *Jurnal Eksplorasi Akuntansi*, 3(4), 784-798. <https://doi.org/10.24036/jea.v3i4.429>
- Ahsan, T., & Qureshi, M. A. (2022). The impact of Islamic banking model and Islamic financial development on bank performance: evidence from dual banking economies. *International Journal of Islamic and Middle Eastern Finance and Management*, 15(3), 602-625. <https://www.emerald.com/insight/content/doi/10.1108/IMEFM-05-2020-0248/full/html>
- Arianty, E., Mahrus, M. L., Hadi, M., & Indrawati, I. (2023). Strengthening Sharia Accountability and Transparency for the Optimization of Cash Waqf Linked Sukuk. *Riset Akuntansi dan Keuangan Indonesia*, 8(2), 159-175. <https://doi.org/10.23917/reaksi.v8i2.2380>
- Ariyani, N. K. S., & Wirakusuma, M. G. (2018). Pengaruh Modal Intelektual Pada Nilai Perusahaan dengan Kinerja Keuangan Sebagai Variabel Mediasi. *E-Jurnal Akuntansi*, 25(1), 464-496. <https://doi.org/10.24843/EJA.2018.v25.i01.p18>
- Aziz, M. R. A., & Hashim, A. A. M. (2017). Intellectual capital (IC) determinants: Impact on productivity of Islamic banks. *Binus Business Review*, 8(3), 189-197. <https://doi.org/10.21512/bbr.v8i3.3741>
- Buallay, A. (2019). Corporate governance, Sharia'ah governance and performance: A cross-country comparison in MENA region. *International Journal of Islamic and Middle Eastern Finance and Management*, 12(2), 216-235. <https://doi.org/10.1108/IMEFM-07-2017-0172>
- Cahya, B. T., Hidayanti, P. W., Kholis, N., & Hanifah, U. (2022). Disclosure Of Islamic Ethical Identity, Islamic Intellectual Capital, Company Size And Financial Performance Of Sharia Banking. *Juara: Jurnal Riset Akuntansi*, 12(1), 53-68. <https://doi.org/10.36733/juara.v12i1.3700>
- Campra, M., Brescia, V., Jafari, V., & Calandra, D. (2021). Islamic countries and Maqasid al-Shariah towards a circular economy: A case study of Dubai. *European Journal of Islamic Finance*, 17, 1–10. <https://doi.org/10.13135/2421-2172/4560>
- Dwianto, A., Triyono, T., & Witono, B. (2024). Optimization of Factors in Increasing the Value of Indonesian Islamic Banking. *Indonesian Interdisciplinary Journal of Islamic Economics (IIJSE)*, 7(1), 868-895. <https://e-journal.uac.ac.id/index.php/iijs/article/view/4367>

- Fajriah, I. N., & Ghozali, I. (2022). The Influence of Enterprise Risk Management on Company Value Mediated by Company Financial Performance. *Diponegoro Accounting Journal*, 11(4), 1-12.
<https://ejournal3.undip.ac.id/index.php/accounting/article/view/36385>
- Firman, M. S., Isman, I., Al Amudi, M. A., & Sembara, P. A. (2023). Zakat Fund Management Strategy for Mustahik Welfare Maqashid Sharia Perspective. *Profetika: Jurnal Studi Islam*, 24(02), 277-291. <https://doi.org/10.23917/profetika.v24i02.2469>
- Fitriana, R., Yulianto, A., & Solikhah, B. (2019). Are the characteristics of the sharia supervisory board able to improve the performance of Islamic banking?. *Journal of Islamic Accounting and Finance Research*, 1(1).
<https://doi.org/10.21580/jiafr.2019.1.1.3753>
- Gonzalez, L. O., Santomil, P. D., & Herrera, A. T. (2020). The impact of Enterprise Risk Management on the risk and performance of Spanish listed companies. *European Research on Management and Business Economics*, 26, 111–120.
<https://doi.org/10.1016/j.iiedeen.2020.08.002>
- Hakim, F., & Suardi, L. (2023). Pengaruh Pengungkapan Enterprises Risk Management (ERM) Terhadap Profitabilitas Perusahaan Terbuka di Industri Keuangan Tahun 2021. *Journal of Management Review*, 7(2), 885-893.
<http://dx.doi.org/10.25157/jmr.v7i2.10655>
- Hosen, M. N., Jie, F., Muhari, S., & Khairman, M. (2019). The Influence of Financial Ratios, Maqasid Syariah Index, and Islamic Social Reporting Index on the Profitability of Islamic Commercial Banks in Indonesia. *Al-Iqtishad: Journal of Islamic Economics*, 11(2), 201–222. <https://doi.org/10.15408/aiq.v11i2.11588>
- Jarwani, G., Sahri, M., Rohmah, N. A., & Nurlatifah, R. (2024). The influence of financial ratios on banking financial performance. *Journal of Islamic Economic Scholar*, 4(1), 31–40.
<https://doi.org/10.14421/jies.2023.4.1.31-40>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
[https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Kismawadi, E. R. (2023). Improving Islamic bank performance through agency costs and dual board governance. *Journal of Islamic Accounting and Business Research*, 16 (3).
<https://doi.org/10.1108/JIABR-01-2023-0035>
- Maisaroh, P., & Nurhidayati, M. (2021). Pengaruh Komite Audit, Good Corporate Governance dan Whistleblowing System terhadap Fraud Bank Umum Syariah di Indonesia Periode 2016-2019. *Etihad: Journal of Islamic Banking and Finance*, 1(1), 23-36.
<https://doi.org/10.21154/etihad.v1i1.2752>
- Manurung, K. A., Nugroho, L. R., Lubis, F. A., & Ningsih, H. T. K. (2023). Analisis Valuasi Saham Dengan Menggunakan Metode Price Book Value (Pbv) Dan Metode Price Earning Ratio (Per) Studi Pada Saham Pt. Intiland Development Tbk Yang Terdaftar Di Bursa Efek Indonesia Pada Tahun 2018-2021. *Bisnis-Net Jurnal Ekonomi Dan Bisnis*, 6(1), 30-39. <https://doi.org/10.46576/bn.v6i1.3383>
- Ma'aayah, S., & Tjahjani, F. (2021). Pengaruh Intellectual Capital Dan Good Corporate Governance Terhadap Nilai Perusahaan Dengan Kinerja Keuangan Sebagai Variabel Intervening. *Jurnal Manajemen Dirgantara*, 14(2), 250-257.
<https://doi.org/10.56521/manajemen-dirgantara.v14i2.290>
- McShane, M. (2018). Enterprise risk management: history and a design science proposal. *The journal of risk finance*, 19(2), 137-153. <https://doi.org/10.1108/JRF-03-2017-0048>
- Meslier, C., Risfandy, T., & Tarazi, A. (2020). Islamic banks' equity financing, Shariah supervisory board, and banking environments. *Pacific-Basin Finance Journal*, 62, 101354.
<https://www.sciencedirect.com/science/article/abs/pii/S0927538X19305827>

- Mukhibad, H., Setiawan, D., Rahmawati, Rochmatullah, M. R., & Warsina. (2022). Sharia supervisory board, maqasid syariah, and accounting-based performance: Evidence from Indonesia. *International Journal of Monetary Economics and Finance*, 15(3), 213-231. <https://doi.org/10.1504/IJMEF.2022.126902>
- Nasution, Q. M., & Haryono, S. (2023). The impact of intellectual capital, Islamic corporate governance, and zakat disclosure on the financial performance of Islamic commercial banks in Southeast Asia. *Economica: Jurnal Ekonomi Islam*, 14(1), 1–18. <https://doi.org/10.21580/economica.2023.14.1.19300>
- Natsir, K., & Bangun, N. (2021). The role of intellectual capital in increasing company value with profitability as an intervening variable. *International Conference on Entrepreneurship and Business Management*. Atlantis Press, 101-110. <https://doi.org/10.2991/aebmr.k.210507.016>
- Nomran, N. M., & Haron, R. (2020). Shari'ah supervisory board's size impact on performance in the Islamic banking industry: An empirical investigation of the optimal board size across jurisdictions. *Journal of Islamic Accounting and Business Research*, 11(1), 110–129. <https://doi.org/10.1108/JIABR-05-2017-0070>
- Sueb, M., Syarifah, L., & Putra, R. N. A. (2022). The effect of shariah board characteristics, risk-taking, and maqasid shariah on an Islamic bank's performance. *Banks and Bank Systems*, 17(3), 89. [http://dx.doi.org/10.21511/bbs.17\(3\).2022.08](http://dx.doi.org/10.21511/bbs.17(3).2022.08)
- Poh, L. T., Kilicman, A., & Ibrahim, S. N. I. (2018). On intellectual capital and financial performances of banks in Malaysia. *Cogent Economics & Finance*, 6(1), 1453574. <https://doi.org/10.1080/23322039.2018.1453574>
- Praptiningsih, P., Nastiti, H., & Nopiyanti, A. (2022). Analysis of corporate governance, intellectual capital, and financial performance using conventional methods and Maqashid Sharia Index (MSI) on the implementation of sustainable finance in Sharia banking in Indonesia. *Dinasti International Journal of Economics, Finance & Accounting*, 3(4), 391-411. <https://doi.org/10.38035/dijefa.v3i4.1430>
- Pratama, R. M., Saifi, M., & Zahro, Z. A. (2024). Does Financial Performance Mediate the Relationship between Corporate Governance and Corporate Value? Evidence from Indonesian Banking Companies. *KnE Social Sciences*, 9(13), 497–520. <https://doi.org/10.18502/kss.v9i11.15839>
- Pratiwi, R. D., & Chariri, A. (2021). The Role of Corporate Governance in Influencing the Relationship Between Intellectual Capital and Financial Performance in the VUCA Era. *International Journal of Science and Applied Sciences: P-ISSN Conference Series*, 5(1). <https://doi.org/10.20961/ijssascs.v5i1.62058>
- Qoda'ah, G., & Abdurrahman, A. (2023). Financial performance on firm value mediated by Islamic performance at Islamic commercial banks in Indonesia. *JPS (Jurnal Perbankan Syariah)*, 4(2), 193-212. <https://doi.org/10.46367/jps.v4i2.1304>
- Rahmadi, I. H., & Mutasowifin, A. (2021). The Influence of Intellectual Capital on Financial Performance and Company Value (Case Study of Financial Sector Companies Listed on the Indonesia Stock Exchange in 2017-2019). *INOBIIS: Indonesian Journal of Business Innovation and Management*, 4(2), 279–294. <https://doi.org/10.31842/jurnalinobis.v4i2.183>
- Setiadi, E. (2020). Analisis pengaruh modal intelektual terhadap nilai perusahaan dengan kinerja perusahaan sebagai variabel intervening. *Thesis*. Universitas Jenderal Soedirman. <https://repository.unsoed.ac.id/15165/>
- Sofiani, L., & Siregar, E. M. (2022). Analisis Pengaruh ROA, CR dan DAR Terhadap Nilai Perusahaan Sektor Makanan dan Minuman. *Jurnal Ilmiah Akuntansi Kesatuan*, 10(1), 9-16. <https://doi.org/10.37641/jiakes.v10i1.1183>

- Stolzle, R., & Xu, J. (2018). Corporate Risk Management and the Cost of Capital. *Journal of Risk and Insurance*, 85(1), 159–201. <https://doi.org/10.1111/jori.12152>
- Toha, M., Ulfa, E., & Dewi, N. S. (2021). Analysis of the Implementation of Sharia Strategy Management at BMT Maslahah. *MJIFM: Majapahit Journal of Islamic Finance and Management*, 1(1), 29-40. <https://doi.org/10.31538/mjifm.v1i1.3>
- Wijayanti, R., & Setiawan, D. (2023). The role of the board of directors and the sharia supervisory board on sustainability reporting. *Journal of Open Innovation: Technology, Markets, and Complexity*, 9(3). <https://doi.org/10.1016/j.joitmc.2023.100083>
- Wira, A., Handra, H., & Syukria, A. (2018). Pengukuran Kinerja Perbankan Syariah dengan Menggunakan Pendekatan Indeks Maqashid Syariah. *Maqdis: Jurnal Kajian Ekonomi Islam*, 3(2), 145-156. <http://dx.doi.org/10.15548/maqdis.v3i2.186>
- Zailani, M. N., Satar, N. H. M., & Zakaria, R. H. (2022). Maqasid Al-Shariah based index of socio-economic development: A literature review. *The Journal of Muamalat and Islamic Finance Research* 19(1), 47-62. <https://doi.org/10.33102/jmifr.v19i1.409>

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Conflicts of Interest

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