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The Moderating Role of Bank Size in Intellectual Capital, Leverage, and Financial Performance: Indonesian Islamic Commercial Banks 2019–2023

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Abstract

Introduction: This study examines the effects of intellectual capital efficiency and leverage on the financial performance of Indonesian Islamic commercial banks, with bank size as a moderating variable. It addresses inconsistent prior findings by testing whether bank scale explains differences in the performance effects of intangible resources and financial structure. **Research Methods:** Using balanced panel data from nine Islamic commercial banks during 2019–2023, this study analyzes 45 bank-year observations. Financial performance is proxied by lnROA, intellectual capital by VAIC, leverage by DER, and bank size by ln(total assets). The data are analyzed using panel-based moderated regression. **Results:** The Random Effect Model shows that VAIC positively affects financial performance ($\beta = 0.5449$; $p < 0.001$), while DER has no significant direct effect ($\beta = -0.0418$; $p = 0.5927$). Bank size does not moderate the VAIC-performance relationship ($\beta = 0.1626$; $p = 0.2663$), but negatively moderates the DER-performance relationship ($\beta = -0.2780$; $p < 0.001$). **Conclusion:** The study contributes by applying panel-based moderation analysis to Islamic bank performance. Islamic banks should strengthen intellectual capital and manage leverage prudently as bank scale increases.

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INTRODUCTION

The development of Islamic banking in Indonesia reflects the growing role of Sharia-based financial intermediation in the national financial system. Islamic commercial banks are expected to provide financial services that are commercially viable, ethically grounded, socially responsible, and compliant with Sharia principles (Rahmah et al., 2025). During the 2019–2023 period, Indonesian Islamic commercial banks experienced important institutional dynamics, including industrial consolidation, post-pandemic recovery, and regulatory strengthening. The number of Islamic commercial banks changed from 14 banks in 2019 and 2020 to 12 banks in 2021, before increasing to 13 banks in 2022 and 2023. In the same period, total assets increased from IDR 350.364 trillion in 2019 to IDR 594.709 trillion in 2023 (Otoritas Jasa Keuangan, 2023). These developments indicate that Islamic commercial banks continued to expand their intermediation role despite a changing economic and institutional environment.

Financial performance remains a central indicator for evaluating the sustainability and managerial quality of Islamic banks. Return on Assets (ROA) is widely used to measure the ability of banks to generate profit from their asset base because it reflects asset-management efficiency and the capacity to convert resources into earnings (Saleh, 2021; Wulandari & Widyawati, 2019). In Islamic banking, ROA is particularly important because banks must balance profitability with prudential standards, Sharia compliance, public trust, and stakeholder expectations. Therefore, identifying factors that improve ROA is essential for strengthening the competitiveness and sustainability of Islamic commercial banks.

One strategic factor that may influence bank performance is intellectual capital. Islamic banking is a knowledge-intensive industry where human competence, organizational systems, digital capability, customer relationships, and Sharia governance capacity play important roles in value creation. Intellectual capital represents intangible resources such as human knowledge, structural processes, organizational routines, and relational capabilities that support efficiency and competitive advantage (Bontis et al., 2000; Clarke et al., 2011). The Value Added Intellectual Coefficient (VAIC) is commonly used to measure the efficiency of intellectual capital in creating value through capital employed, human capital, and structural capital (Pulic, 2000). From the resource-based view, intellectual capital can become a strategic resource because it is valuable, difficult to imitate, and embedded in organizational capability (Barney, 1991).

Previous studies generally support the importance of intellectual capital for bank performance, but the empirical evidence remains inconsistent. Several studies found that intellectual capital efficiency is positively associated with financial performance in Islamic banks and financial institutions (Asutay & Ubaidillah, 2024; Nawaz & Haniffa, 2017; Ousama et al., 2020; Rehman et al., 2022). Studies in Indonesia also show that intellectual capital contributes to bank performance, including in Islamic banks and banking firms more broadly (Novitasari et al., 2022; Soewarno & Tjahjadi, 2020). However, other findings indicate that the effect of intellectual capital is not always uniform across components, indicators, and contexts. Akkas & Asutay (2023)

reported that Islamic banks may lag behind conventional banks in the performance effect of structural capital. Hadi et al. (2024) found that several components of intellectual capital, including structural capital, capital employed, and relational capital, did not significantly affect cost efficiency in Indonesian Islamic banks. Mohapatra et al. (2019) also showed that not all intellectual capital components contribute positively to banking efficiency. These mixed findings indicate that intellectual capital does not automatically improve financial performance unless it is supported by organisational scale, managerial capacity, and the ability to transform intangible resources into productive assets.

Leverage is another financial factor that may influence bank performance. In this study, leverage is measured by the Debt to Equity Ratio (DER), which reflects the proportion of liabilities relative to equity. Although Islamic banks do not use interest-based debt in the conventional corporate sense, leverage remains relevant because Islamic banks manage third-party funds and Sharia-based financial contracts that create financial obligations and risk exposure. Properly managed leverage may support asset expansion and income generation, whereas excessive leverage may increase financial risk and reduce profitability (Kurniawan & Samhaji, 2020; Nuryani et al., 2023). From signalling theory, leverage can also be interpreted by stakeholders as a signal of financial structure, risk, and managerial capacity (Spence, 1973).

Empirical findings on leverage and financial performance are also inconclusive. Some studies suggest that leverage can affect financial performance because debt or liabilities may support business expansion when used productively. However, other studies show that leverage has a negative or insignificant effect on profitability, especially when higher liabilities are not accompanied by efficient asset utilisation and risk management (Budiadnyani et al., 2023; Kurniawan & Samhaji, 2020; Yanti et al., 2024). In Islamic banking, this relationship may be more complex because bank liabilities are closely related to third-party funds, prudential regulation, financing risk, and public trust. Thus, DER may not directly explain ROA unless the bank can allocate funds into productive financing and control operational as well as financing risks.

The inconsistent findings on intellectual capital and leverage suggest the need to consider a contingency factor that may shape their effect on financial performance. Bank size is relevant in this regard because larger banks generally possess broader asset bases, more advanced technology, stronger human resources, more diversified income sources, and better risk-management systems. These conditions may enable larger banks to convert intellectual capital into financial performance more effectively. Bank size may also influence how leverage affects performance because larger banks may have stronger capital buffers, wider market reach, and better capacity to manage financial obligations. Prior studies have used firm or bank size as an important control or moderating variable in explaining intellectual capital, leverage, and performance relationships (Akkas & Asutay, 2022; Chen et al., 2005; Clarke et al., 2011; Septiarini et al., 2021).

Based on this literature, the research gap in this study lies in three areas. First, although many studies have examined intellectual capital and bank performance, the findings remain mixed, especially when intellectual capital is examined across different banking systems, components, and performance indicators. Second, the effect of leverage on financial performance remains unsettled, with prior studies reporting positive, negative, or insignificant effects. Third, studies on Indonesian Islamic commercial banks have not sufficiently explained whether bank size strengthens or weakens the effects of intellectual capital efficiency and leverage on ROA during the 2019–2023 period, a period marked by consolidation, pandemic disruption, and post-pandemic recovery.

Therefore, this study examines the effect of intellectual capital efficiency and leverage on the financial performance of Indonesian Islamic commercial banks, with bank size as a moderating variable. The study addresses four research questions: first, does intellectual capital efficiency affect the financial performance of Indonesian Islamic commercial banks? Second, does leverage affect financial performance? Third, does bank size moderate the relationship between intellectual capital efficiency and financial performance? Fourth, does bank size moderate the relationship between leverage and financial performance?

This study contributes to the literature in three ways. First, it provides empirical evidence on intellectual capital efficiency and financial performance in Indonesian Islamic commercial banks during the 2019–2023 period. Second, it clarifies the role of leverage in Islamic banking profitability by examining DER in relation to ROA. Third, it introduces bank size as a moderating variable, offering a more nuanced explanation of why intellectual capital and leverage may produce different performance outcomes across Islamic banks with different organizational scales.

METHOD

This study employs a quantitative causal approach to examine the effect of intellectual capital efficiency and leverage on the financial performance of Indonesian Islamic commercial banks, with bank size as a moderating variable. A quantitative approach is appropriate because the variables are measured using numerical indicators derived from published annual financial reports, while the causal design is used to test the relationship among intellectual capital efficiency, leverage, bank size, and financial performance.

The population consists of Islamic commercial banks in Indonesia during the 2019–2023 period. The sample was selected using purposive sampling based on several criteria: the bank operated as an Islamic commercial bank during the observation period; the bank published complete annual reports for 2019–2023; the financial reporting year ended on December 31; the bank did not experience a structural change that materially disrupted data comparability; and the bank provided complete data required to calculate financial performance, intellectual capital

efficiency, leverage, and bank size. Based on these criteria, nine Islamic commercial banks were selected, resulting in 45 bank-year observations.

This study uses secondary data obtained from the annual reports of Indonesian Islamic commercial banks. Data were collected through documentation by identifying financial statement items needed to calculate Return on Assets, Value Added Intellectual Coefficient, Debt to Equity Ratio, total assets, and the interaction terms. Because the dataset combines cross-sectional units and time-series observations, it is structured as balanced panel data consisting of nine banks observed over five years. Therefore, panel data regression is considered more appropriate than ordinary multiple linear regression because it allows the model to account for both differences across banks and changes over time.

Financial performance is measured by Return on Assets (ROA), which reflects the ability of a bank to generate earnings from its asset base (Saleh, 2021; Wulandari & Widyawati, 2019). In the empirical estimation, financial performance is represented by the natural logarithmic transformation of ROA, denoted as lnROA, to improve the statistical scale of the dependent variable in the panel regression model.

ROA = Profit before tax / Total assets x 100% *(1)*

Intellectual capital efficiency is measured using the Value Added Intellectual Coefficient (VAIC). VAIC is calculated as the sum of Value Added Capital Employed, Value Added Human Capital, and Structural Capital Value Added. These components represent the efficiency of capital employed, human capital, and structural capital in creating value added (Clarke et al., 2011; Ghozali et al., 2008; Olivia et al., 2021).

VAIC = VACA + VAHU + STVA *(2)*

Leverage is measured by the Debt to Equity Ratio (DER), which reflects the proportion of liabilities relative to equity and indicates the financial structure of the bank (Nuryani et al., 2023; Syafi'i & Haryono, 2021).

DER = Total liabilities / Total equity *(3)*

Bank size is measured by the natural logarithm of total assets. This proxy is used because total assets represent the scale of resources controlled by the bank, while the logarithmic transformation helps reduce scale differences among banks (Atmadja et al., 2022; Sinaga et al., 2024)

SIZE = Ln(Total assets) *(4)*

Data analysis is conducted using Moderated Regression Analysis within a panel data regression framework. The analysis begins with descriptive statistics to describe the distribution of each variable. The direct-effect model is then estimated using three panel regression specifications: Common Effect Model, Fixed Effect Model, and Random Effect Model. Model selection is conducted using the Chow Test to compare the Common Effect Model and Fixed Effect Model, the Hausman Test to compare the Fixed Effect Model and Random Effect Model, and the Lagrange Multiplier Test to compare the Common Effect Model and Random Effect Model. The same model-selection procedure is also applied to the moderated regression model (Baltagi, 2021).
The direct-effect panel regression model is formulated as follows:

$$lnROA_{it} = \beta_0 + \beta_1 VAIC_{it} + \beta_2 DER_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

The moderated panel regression model is formulated as follows:

$$lnROA_{it} = \beta_0 + \beta_1 VAIC_{it} + \beta_2 DER_{it} + \beta_3 SIZE_{it} + \beta_4 (VAIC_{it} \times SIZE_{it}) + \beta_5 (DER_{it} \times SIZE_{it}) + \mu_i + \varepsilon_{it} \quad (6)$$

In these equations, $lnROA_{it}$represents the financial performance of bank $i$in year t, $VAIC_{it}$represents intellectual capital efficiency, DER_{it}represents leverage, and $SIZE_{it}$represents bank size. The interaction terms $VAIC_{it} \times SIZE_{it}$and $DER_{it} \times SIZE_{it}$are used to test the moderating role of bank size. Furthermore, $\beta_0$denotes the intercept, $\beta_1$to $\beta_5$denote the regression coefficients, $\mu_i$captures unobserved bank-specific effects, and ε_{it}represents the idiosyncratic error term. A significant interaction coefficient indicates that bank size moderates the relationship between the independent variable and financial performance.

RESULT AND DISCUSSION

The descriptive statistics show that the study uses 45 bank-year observations. VAIC has a minimum value of 0.7467, a maximum value of 5.7743, a mean of 2.4953, and a standard deviation of 1.1225. DER has a minimum value of 0.3119, a maximum value of 13.7752, a mean of 4.9075, and a standard deviation of 3.6824. SIZE has a minimum value of 14.3228, a maximum value of 18.0195, a mean of 16.4192, and a standard deviation of 0.8495. The dependent variable, lnROA, has a minimum value of 0.5766, a maximum value of 7.2138, a mean of 4.3594, and a standard deviation of 1.7342.

Table 3. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
VAIC	45	0.7467	5.7743	2.4953	1.1225
DER	45	0.3119	13.7752	4.9075	3.6824
SIZE	45	14.3228	18.0195	16.4192	0.8495
LnROA	45	0.5766	7.2138	4.3594	1.7342

Source: Secondary data processed by the author.

The descriptive statistics indicate that the sampled Islamic commercial banks have different levels of intellectual capital efficiency, leverage, firm size, and profitability. The variation in DER suggests that the banks differ substantially in their liability-to-equity structure, while the variation in VAIC indicates differences in the ability of banks to transform intellectual resources into value added. The variation in lnROA also reflects heterogeneous profitability conditions across Islamic commercial banks during the 2019-2023 period.

Panel Model Selection for the Direct-Effect Model

Before interpreting the direct effect of VAIC and DER on financial performance, model selection was conducted using the Chow Test, Hausman Test, and Lagrange Multiplier Test. The Chow Test produced a probability value of 0.0000, indicating that FEM is more appropriate than CEM. The Hausman Test produced a probability value of 1.0000, indicating that REM is more appropriate than FEM. The Lagrange Multiplier Test produced a probability value of 0.0000, indicating that REM is more appropriate than CEM. Therefore, the direct-effect model is interpreted using the Random Effect Model

Table 4. Panel Model Selection for Direct-Effect Model

Test	Comparison	Statistic	df	Prob.	Decision
Chow Test	CEM vs FEM	25.9413	8; 34	0.0000	FEM is preferred
Hausman Test	FEM vs REM	0.0000	2	1.0000	REM is preferred
Lagrange Multiplier Test	CEM vs REM	51.9414	1	0.0000	REM is preferred
Selected model	-	-	-	-	REM

Source: Secondary data processed by the author.

Direct-Effect Panel Regression Results

The Random Effect Model is used to test the direct effect of intellectual capital efficiency and leverage on financial performance. The result shows that VAIC has a positive coefficient of 0.5449 with a probability value of 0.0000. Since the probability value is lower than 0.05, VAIC has a positive and significant effect on lnROA. DER has a coefficient of -0.0418 with a probability value of 0.5927. Since the probability value is greater than 0.05, DER does not significantly affect lnROA.

Table 5. Direct-Effect Panel Regression Results (REM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Decision
C	3.2049	0.6645	4.8227	0.0000	Significant
VAIC	0.5449	0.0980	5.5611	0.0000	Significant
DER	-0.0418	0.0776	-0.5390	0.5927	Not significant

Source: Secondary data processed by the author.

Table 6. Model Fit of Direct-Effect Panel Regression (REM)

Model	R-squared	Adjusted R-squared	F-statistic	Prob. F-statistic
REM	0.4486	0.4223	17.0833	0.0000

Source: Secondary data processed by the author.

The direct-effect model has an R-squared value of 0.4486 and an adjusted R-squared value of 0.4223. This means that VAIC and DER explain 42.23% of the variation in lnROA after adjustment, while the remaining variation is explained by other factors outside the model, such as financing quality, operational efficiency, liquidity, capital adequacy, governance, and macroeconomic conditions.

Panel Model Selection for the Moderated Regression Model

The moderated regression model was also estimated using CEM, FEM, and REM. The Chow Test produced a probability value of 0.0000, indicating that FEM is more appropriate than CEM. The Hausman Test produced a probability value of 0.7664, indicating that REM is more appropriate than FEM. The Lagrange Multiplier Test produced a probability value of 0.0000, indicating that REM is more appropriate than CEM. Therefore, the moderated regression model is interpreted using the Random Effects Model.

Table 7. Panel Model Selection for the Moderated Regression Model

Test	Comparison	Statistic	df	Prob.	Decision
Chow Test	CEM vs FEM	8.7156	8; 31	0.0000	FEM is preferred
Hausman Test	FEM vs REM	2.5669	5	0.7664	REM is preferred
Lagrange Multiplier Test	CEM vs REM	25.2273	1	0.0000	REM is preferred
Selected model	-	-	-	-	REM

Source: Secondary data processed by the author.

Moderated Regression Analysis within a Panel Data Framework

The moderated regression analysis examines whether company size changes the strength or direction of the effect of VAIC and DER on financial performance. The result shows that VAIC has a coefficient of -2.2199 with a probability value of 0.3470, while DER has a coefficient of 4.5050 with a probability value of 0.0000. SIZE has a positive coefficient of 1.5339 with a probability value of 0.0022. However, in a model that includes interaction terms, the main coefficients of VAIC, DER, and SIZE should be interpreted carefully because they represent conditional effects when the interacting variable is zero, which is outside the observed range of

bank size. Therefore, the main focus of moderation testing is the significance and direction of the interaction terms.

The interaction between VAIC and SIZE has a coefficient of 0.1626 with a probability value of 0.2663. Since the probability value is greater than 0.05, company size does not significantly moderate the relationship between intellectual capital efficiency and financial performance. In contrast, the interaction between DER and SIZE has a coefficient of -0.2780 with a probability value of 0.0000. This indicates that company size significantly moderates the relationship between leverage and financial performance. The negative coefficient means that company size weakens the effect of DER on lnROA

Table 8. Moderated Panel Regression Results (REM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Decision
C	-21.1389	7.3949	-2.8586	0.0068	Significant
VAIC	-2.2199	2.3320	-0.9519	0.3470	Not significant
DER	4.5050	0.8878	5.0744	0.0000	Significant
SIZE	1.5339	0.4669	3.2854	0.0022	Significant
VAIC × SIZE	0.1626	0.1442	1.1278	0.2663	Not significant
DER × SIZE	-0.2780	0.0526	-5.2812	0.0000	Significant

Source: Secondary data processed by the author.

Table 9. Model Fit of Moderated Panel Regression (REM)

Model	R-squared	Adjusted R-squared	F-statistic	Prob. F-statistic
REM	0.7094	0.6721	19.0386	0.0000

Source: Secondary data processed by the author.

The moderated model has an R-squared value of 0.7094 and an adjusted R-squared value of 0.6721. This indicates that VAIC, DER, SIZE, and the two interaction terms explain 67.21% of the variation in lnROA after adjustment. The explanatory power of the moderated model is higher than that of the direct-effect model, suggesting that incorporating company size and interaction terms provides a more comprehensive explanation of financial performance in Islamic commercial banks.

Based on the direct-effect and moderated panel regression results, H1 is accepted because VAIC has a positive and significant effect on financial performance. H2 is rejected because DER does not have a significant direct effect on financial performance. H3 is rejected because company size does not significantly moderate the effect of VAIC on financial performance. H4 is accepted because company size significantly moderates the effect of DER on financial performance, with a negative moderating direction.

The Effect of Intellectual Capital Efficiency on Financial Performance

The direct-effect panel regression shows that intellectual capital efficiency has a positive and significant effect on the financial performance of Indonesian Islamic commercial banks. This finding indicates that banks with higher VAIC tend to achieve higher lnROA. The result supports the view that intellectual capital is a strategic resource that can improve value creation, operational efficiency, service quality, and profitability (Alia et al., 2022; Clarke et al., 2011; Ishfahani et al., 2022).

This finding is consistent with the Resource-Based View, which states that valuable, rare, inimitable, and non-substitutable resources can become sources of competitive advantage (Barney, 1991). In Islamic commercial banks, intellectual capital includes employee competence, Sharia product knowledge, information systems, organizational routines, and stakeholder relationships. These resources are important because Islamic banks compete not only through financial products but also through trust, compliance, service quality, and ethical reputation. When these resources are managed efficiently, they can improve profitability through better financing decisions, stronger customer relationships, reduced operational inefficiency, and improved innovation.

The result is consistent with previous studies showing that intellectual capital contributes to Islamic bank performance. Kholilah et al., (2021) found that intellectual capital significantly affects the financial performance of Islamic commercial banks in Indonesia. Alia et al., (2022) also showed that intellectual capital contributes to the financial performance of Islamic commercial banks. Aroof et al., (2023) Further demonstrated that intellectual capital, Sharia compliance, and Islamicity performance are relevant in explaining Islamic bank performance. Therefore, the result confirms that intellectual capital efficiency remains an important determinant of profitability in Indonesian Islamic commercial banks.

The Effect of Leverage on Financial Performance

The direct-effect panel regression shows that leverage, as measured by DER, does not significantly affect financial performance. Although the coefficient is negative, the probability value is greater than 0.05. This indicates that changes in DER do not directly explain changes in lnROA among the sampled Islamic commercial banks during the 2019-2023 period.

This result can be understood through signalling theory. Leverage may signal financial structure and risk, but stakeholders may not interpret DER as a direct indicator of profitability unless it is supported by stronger asset productivity, better financing quality, and effective risk management (Spence, 1973; Yufrizal, 2022). In Islamic banking, liabilities are closely related to third-party funds and Sharia-compliant contracts. Therefore, DER may not have the same implication as leverage in non-bank firms because bank profitability depends not only on the proportion of liabilities to equity but also on the ability to channel funds into productive and low-risk financing.

The insignificant effect of DER supports studies suggesting that leverage does not always directly improve financial performance (Budiadnyani et al., 2023; Siboro, 2023). In the context of Islamic commercial banks, profitability is more likely to be influenced by financing quality,

operational efficiency, liquidity management, non-performing financing, and capital adequacy than by leverage alone. Therefore, leverage should be managed prudently and integrated with effective fund allocation and risk governance.

The Moderating Role of Company Size in the Relationship Between Intellectual Capital Efficiency and Financial Performance

The moderated panel regression shows that the interaction between VAIC and SIZE is not significant. This means that company size does not significantly strengthen or weaken the effect of intellectual capital efficiency on financial performance. Although the interaction coefficient is positive, the probability value exceeds 0.05, so the moderating effect is not statistically supported.

This finding suggests that the positive contribution of intellectual capital to financial performance is not necessarily dependent on bank size. Smaller Islamic banks may still benefit from intellectual capital if they can manage employee competence, organizational systems, customer relationships, and Sharia compliance effectively. Conversely, larger banks may not automatically obtain stronger profitability from intellectual capital unless their resources are managed efficiently and translated into productive business processes.

From the perspective of the Resource-Based View, intellectual capital can be valuable across different organisational scales. However, company size alone may not be sufficient to determine whether intellectual capital creates stronger financial performance. The effectiveness of intellectual capital may depend more on the quality of human resources, digital capability, product innovation, governance, and operational efficiency than on asset size alone. Therefore, Islamic banks should continue to strengthen intellectual capital management regardless of their scale.

The Moderating Role of Company Size in the Relationship Between Leverage and Financial Performance

The moderated panel regression shows that the interaction between DER and SIZE is negative and significant. This indicates that company size significantly moderates the relationship between leverage and financial performance. The negative coefficient means that a larger company size weakens the effect of DER on lnROA. In other words, the relationship between leverage and profitability becomes less favourable as the bank becomes larger.

This finding provides a more nuanced interpretation of leverage in Islamic banking. The direct-effect model shows that DER does not significantly affect financial performance, but the moderated model shows that the effect of DER depends on company size. Larger Islamic banks may have greater asset bases and broader funding structures, but these conditions do not automatically convert leverage into higher profitability. If additional liabilities are not supported by productive financing, efficient operations, and strong risk control, leverage may weaken profitability, especially in larger banks with more complex operations.

The negative moderating role of SIZE is also relevant to signalling theory. High leverage in larger banks may be interpreted as a stronger risk signal if it is not accompanied by proportional

earnings growth and asset productivity. In Islamic commercial banks, liabilities are related to third-party funds and Sharia-based obligations, so a larger scale requires stronger fund management, risk governance, and financing quality. Therefore, the finding implies that larger Islamic banks should not rely only on scale and funding expansion, but must ensure that leverage is used efficiently to generate sustainable profitability.

Overall, the findings show that intellectual capital efficiency directly improves financial performance, while leverage does not have a significant direct effect. Company size does not moderate the VAIC-performance relationship, but it significantly weakens the DER-performance relationship. These results suggest that Islamic commercial banks should prioritize intellectual capital efficiency and manage leverage carefully, particularly as bank size increases.

CONCLUSION

This study examines the effect of intellectual capital efficiency and leverage on the financial performance of Indonesian Islamic commercial banks during 2019–2023, with bank size as a moderating variable. The results indicate that intellectual capital efficiency has a positive and significant effect on financial performance, suggesting that effective management of human capital, structural capital, and capital employed contributes to higher profitability and strengthens the competitiveness and sustainability of Islamic banks. In contrast, leverage does not have a significant direct effect on financial performance, implying that profitability is influenced more by productive financing allocation, risk management, asset quality, and operational efficiency than by capital structure alone. The moderation analysis further reveals that bank size does not significantly moderate the relationship between intellectual capital efficiency and financial performance but significantly moderates the relationship between leverage and financial performance, indicating that the impact of leverage varies according to bank scale.

These findings suggest that Islamic banks should prioritize the development of intellectual capital through employee competence, digital capabilities, organizational systems, Sharia governance, and customer relationship management, while managing leverage prudently in line with their operational complexity. However, this study is limited by its sample of nine Islamic commercial banks (45 bank-year observations), reliance on secondary financial data, and focus on selected variables such as VAIC, DER, bank size, and financial performance. Future research is encouraged to expand the sample and observation period, include additional determinants such as Sharia governance, maqasid sharia performance, financing risk, operational efficiency, and macroeconomic factors, and apply more advanced approaches such as dynamic panel models, robustness testing, or cross-country comparative analysis to provide a broader understanding of Islamic bank performance.

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