



Efficiency, Financing Quality, and Capital Ratios of Indonesian Islamic Banks: An Exploratory 2025 Baseline

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ARTICLE INFO

Article history:

Received: 5 July 2026

Revised: 5 August 2026

Accepted: 29 September 2026

Available online: 30 September 2026

E-ISSN: 2776-6276

P-ISSN: -

How to cite:

Yani, F., Amri, M. A., "Efficiency, Financing Quality, and Capital Ratios of Indonesian Islamic Banks: An Exploratory 2025 Baseline", Journal of Management Analytical and Solution (JoMAS), Vol. 6, No. 3, September. 2026, doi: doi.org/10.32734/jomas.v6i3.26904



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<http://doi.org/10.32734/jomas.v6i3.26904>

ABSTRACT

This study establishes an exploratory cross-sectional baseline for the Indonesian Islamic commercial banking industry (Bank Umum Syariah, BUS) in the 2025 financial year, the last year before the phased Basel III-style liquidity regime of OJK Regulations No. 20 and No. 21 of 2025 begins to bind. Twelve of the thirteen BUS operating at 31 December 2025 are analysed using bank-reported supervisory ratios traced to a named page of each annual report and verified against source on 28 September 2026. Reported CAR ranges from 19.08 to 57.74 percent and profitability dispersion is wide (ROA 0.05-7.15 percent; operating cost ratio 69.08-113.23 percent). Because Shapiro-Wilk tests reject normality for four of six ratios, inference rests on rank correlation, permutation tests with 200,000 resamples, and bias-corrected bootstrap intervals rather than parametric p-values alone. Only two associations survive Holm correction: the inverse relationship between the operating cost ratio and return on equity, and the positive relationship between gross NPF and the operating cost ratio. The apparent CAR-ROA association ($r = 0.721$) is produced by one bank and collapses when it is removed ($r = 0.328$). Asset scale shows no detectable association with profitability. A full-text disclosure audit found that three banks voluntarily reported realised LCR figures for 2025 and two reported NSFR, so the pre-regime year is not uniformly undisclosed. The design identifies associations only, and observed patterns remain consistent with ownership, business model, and reporting-scope differences that are not controlled.

Keyword: Islamic commercial banks, Operational efficiency, Financing quality, Capital adequacy, Basel III

1. Introduction

1. Introduction

Indonesia's Islamic banking industry entered an intensive phase of structural consolidation during 2025. Alongside the continued expansion of Bank Syariah Indonesia, the entity formed from the merger of three state-owned Islamic banks, the year saw the creation of Bank Syariah Nasional through the acquisition of PT Bank Victoria Syariah by PT Bank Tabungan Negara (Persero) Tbk and the integration of its parent's Islamic business unit in December 2025. In the same year the regulatory framework governing liquidity for Islamic banks changed fundamentally.

On 12 September 2025 the Financial Services Authority (Otoritas Jasa Keuangan, OJK) enacted Regulation No. 20 of 2025 on the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) for Islamic Commercial Banks and Islamic Business Units [1], promulgated on 17 September 2025, together with Regulation No. 21 of 2025 on the leverage ratio [2]. OJK presented both as measures to align the industry with international standards [3].

The obligations created by Regulation No. 20 of 2025 run on four distinct tracks that must not be conflated, because each takes effect on a different date. Table 1 sets them out by article, verified line by line against the promulgated text.

Table 1. Obligations under OJK Regulation No. 20 of 2025, by type and article

Obligation	Instrument	First applicable position / threshold	Article
Headline minimum, continuous	LCR	100%	2(6)
Headline minimum	NSFR	100%	2(7)
Scope of application	Both	Individual and consolidated	3
Daily calculation	LCR	1 June 2026	11(a), 12(1)
Monthly calculation and reporting	LCR	31 January 2026	11(b), 13(1)
Quarterly publication	LCR	September 2026 position	11(c), 16(1)
Phased binding threshold	LCR	80% from 30 Jun 2026; 90% from 30 Jun 2027; 100% from 30 Jun 2028	17(2)
Monthly monitoring	NSFR	31 January 2026	22(1)-(2)
Quarterly report submission	NSFR	End-September 2026	23(2)
Quarterly publication and disclosure	NSFR	End-September 2026 position	25(2)
Phased binding threshold	NSFR	80% at 31 Dec 2026; 90% at 31 Dec 2027; 100% at 31 Dec 2028	26(2)

Source: compiled by the authors from the official text of OJK Regulation No. 20 of 2025 [1]

Two consequences follow. First, no phased threshold binds before 30 June 2026 and no reporting obligation applies before the 31 January 2026 position, so the 2025 financial year lies entirely outside the regime. Second, annual reports for 2025 were under no obligation to disclose realised LCR or NSFR figures. This study is therefore a baseline portrait of capital ratios, efficiency and financing quality immediately preceding the regime, not an assessment of liquidity readiness. Whether any bank disclosed such figures voluntarily is an empirical question, settled by the disclosure audit in Section 3.6 rather than assumed.

1.1 Prior evidence and what the 2025 setting adds

The determinants of bank performance are not uniform across settings. Athanasoglou, Brissimis and Delis [4] found that virtually all bank-specific determinants affect profitability in the expected direction, with the notable exception of bank size. Berger [5] documented a positive relationship between capital ratios and returns in United States banking, contrary to the expectation that higher capital depresses returns. In the Islamic context, Beck, Demircug-Kunt and Merrouche [6] reported that Islamic banks tend to be less cost-effective but better capitalised, while Cihak and Hesse [7] found small Islamic banks financially stronger than large ones. Bashir [8] examined profitability determinants in the Middle East and Srairi [9] compared cost and profit efficiency in the Gulf Cooperation Council. Indonesian evidence includes Hosen and Rahmawati [10] on efficiency and profitability, Mukhibad and Khafid [11] on performance determinants, Widarjono, Salandra, Susantun and Ruchba [12] on a single-bank case, and Ali, Shuib and Nor [13] on the joint role of asset quality and operational efficiency. Nisa', Andriansyah and Hasan [14] analysed twelve Indonesian Islamic banks over 2014-2018 and reported significant negative effects of NPF and BOPO on ROA alongside no significant effect of CAR.

Work published in this journal supplies further context. Siahaan, Silalahi, Syahyunan and Sianipar [15] examined how sustainability practice and financial performance relate to the profitability of banks listed on the Indonesia Stock Exchange, establishing a precedent for cross-bank profitability analysis on published Indonesian banking data. Chindengwike [16] analysed the relationship between profitability and payout among firms listed on the Dar es Salaam Stock Exchange, illustrating correlation-based profitability analysis in an emerging market. Siregar, Hutagalung, Dilham and Qamariah [17] studied Islamic pawnbroking finance and

the development of micro and small enterprises in Medan, documenting how Islamic financing quality translates into borrower outcomes.

The contribution of the present study should be stated precisely, because a reader could reasonably ask what a single additional year adds to this accumulated evidence. The contribution is contextual and evidentiary rather than theoretical. Contextually, 2025 is the terminal pre-regime year for a rule that will re-price liquidity for the whole industry, and it is also the year in which the population itself changed through the creation of a new large bank; a baseline measured after the regime binds can no longer be constructed. Evidentially, the study assembles twelve of the thirteen banks in the population at one date, traces every value to a named page of its source document, and publishes a comparability audit of the definitional and scope differences that such a compilation conceals. Methodologically, the study substitutes distribution-free and resampling inference for the parametric correlations that dominate this literature at comparable sample sizes, and reports influence diagnostics for every retained association. The study makes no theoretical contribution and does not claim one: it neither tests a new mechanism nor identifies a causal parameter.

1.2 Research questions and propositions

Two questions are posed. First, what is the profile of profitability, operational efficiency and reported capital ratios across Indonesian Islamic Commercial Banks in 2025? Second, which of capital adequacy, operational efficiency, financing quality and asset scale is most consistently associated with profitability across banks? Four exploratory propositions follow from the literature: operational inefficiency is negatively associated with profitability (P1); poor financing quality is positively associated with operational inefficiency (P2); capital adequacy is positively associated with profitability (P3); and asset scale is not significantly associated with profitability (P4).

Two definitional points require care. Operational efficiency in Indonesian supervisory practice is measured by the ratio of operating expenses to operating income (Biaya Operasional terhadap Pendapatan Operasional, BOPO). BOPO and ROA are not independent constructs: operating expenses enter the numerator of BOPO and reduce the profit that forms the numerator of ROA, so part of any negative association between them is an accounting identity rather than an economic relationship, and the same applies to BOPO and ROE. Simultaneity compounds this, because a bank whose income falls will show a higher BOPO without any change in its cost base. This study therefore does not treat BOPO as an independent causal determinant of profitability at any point; it treats the BOPO-profitability association as a measure of the dispersion of efficiency across the industry. BOPO is also distinct from the cost to income ratio, which Indonesian Islamic banks report alongside it with materially different values.

2. Method

2.1 Design and identification strategy

The study applies a descriptive-quantitative cross-sectional design for the 2025 financial year and reports bivariate associations. The limits of that choice should be stated plainly. Bivariate correlation cannot identify the independent contribution of any variable, because ownership structure, business model, customer segment, consolidation status and provisioning policy are not held constant, and any of them could generate the observed pattern. A multivariate specification is not a remedy at this sample size: with twelve observations, a model carrying even three controls would exhaust the available degrees of freedom and produce estimates less reliable than the correlations it replaced. The design is therefore appropriate for describing the joint distribution of published ratios and for establishing which associations are robust enough to merit testing in a specification that can control for those factors, and it is appropriate for nothing beyond that. The propositions are evaluated as associations. No causal claim is made or implied, and Section 3.7 sets out the alternative explanations that remain open.

2.2 Population, sample and exclusions

The population comprises all Islamic Commercial Banks operating in Indonesia. According to the OJK Sharia Banking Statistics for the December 2025 position, thirteen Islamic Commercial Banks and twenty Islamic Business Units were in operation [18]. The population was not constant through the year: Bank Syariah Nasional received its licence as an Islamic Commercial Bank on 24 September 2025 and absorbed its parent's Islamic business unit on 22 December 2025, so the count of thirteen refers to the year-end position.

Twelve of the thirteen banks are analysed, a coverage of 92.3 percent. They are Bank Syariah Indonesia, Bank Syariah Nasional, Bank Muamalat Indonesia, Bank Aceh Syariah, BTPN Syariah, BCA Syariah, Bank Mega Syariah, Bank NTB Syariah, Bank Jabar Banten Syariah, Bank Aladin Syariah, Nanobank Syariah and KB Bank Syariah. Inclusion required that the 2025 annual report disclose the complete standard supervisory ratio set, namely CAR, ROA, ROE, BOPO, FDR and gross and net NPF.

One bank is excluded: Panin Dubai Syariah Bank. Its audited financial statements for the fourth quarter of 2025 disclose a capital adequacy ratio of 18.86 percent and total assets of IDR 19,117.6 billion but do not present the standard ratio table, so ROA, ROE, BOPO, FDR and gross NPF could not be obtained on a comparable basis [37]. The exclusion is not random with respect to the variables of interest, and the direction of the resulting bias is knowable in part. The excluded bank is mid-sized and its disclosed capital ratio of 18.86 percent is below every ratio in the analysed sample, so the reported dispersion of capital ratios is if anything understated. Its profitability and efficiency are unobserved, so no statement about the direction of bias in those variables is possible. A single exclusion from a population of thirteen cannot be dismissed as immaterial, and every result below should be read as describing the twelve banks analysed rather than the industry as a whole.

2.3 Data provenance and comparability audit

The data are secondary and consist of the supervisory ratios each bank reports for itself. Using bank-reported ratios keeps every figure within the definitions prescribed by OJK, but it does not by itself deliver comparability, and the study does not claim that it does. Every value in Table 2 was traced to a named page of the source report and verified against the source document on 28 September 2026 by both authors working independently, with disagreements resolved by returning to the source page. Table A1 in the appendix records, for each bank, the section and page of the ratio table, the page of the balance sheet, the reporting scope and the reference number of the source document; the stable URL of each report is given in references [25] to [36]. Page numbers refer to the printed pagination of each report.

The audit surfaced six comparability issues that a compilation of this kind would otherwise conceal. They are set out in Table 3 and referred to again wherever they bear on a result.

Table 3. Comparability issues identified in the source documents

Issue	Banks affected	Effect on comparability	Treatment in this study
Reporting scope is consolidated, not individual	Muamalat, BTPN Syariah	Ratios mix parent and subsidiary balances	Disclosed in Table A1; BTPNS excluded in sensitivity tests
Label of the efficiency ratio is REO, not BOPO	Bank Mega Syariah	Same supervisory construct under a different label	Treated as equivalent; label recorded
Ratios rounded to one decimal place	BCA Syariah	Lower reported precision than other banks	Reproduced as published; no spurious precision added
Gross NPF absent from the highlights table	Muamalat	Variable taken from a different section	Source page recorded separately in Table A1
Pro forma ratios published alongside reported ratios	Bank Syariah Nasional	Two defensible values for the same variable	Reported values used; pro forma reported in Section 3.3
Stock-flow mismatch after mid-year integration	Bank Syariah Nasional	Year-end balance sheet not matched by full-year income	Excluded in sensitivity tests

Source: authors' audit of the twelve source reports, 28 September 2026.

Two of these deserve emphasis here. Bank Syariah Nasional publishes pro forma ratios alongside its reported ratios, restating the year as though the December 2025 integration had occurred at the start of the period; the two sets differ materially and both are defensible, so the choice between them is a judgement rather than a fact. BTPN Syariah reports on a consolidated basis covering the bank and its subsidiaries, whereas most sampled banks report individually; since BTPN Syariah is also the most influential observation in the analysis, this scope difference is a live alternative explanation for its position rather than a technicality. There are no missing values in the twelve-bank sample: every variable was located for every bank, so no imputation was required and all tests use the complete set of twelve observations.

2.4 Statistical procedures

All computations were performed in Python 3.11 with NumPy 2.3 [19] and SciPy 1.16 [20]. Every test is two-sided and evaluated at a nominal five percent level. Random number generation uses a fixed seed (2026) so that every reported figure is exactly reproducible.

Distributional assumptions were tested before inference rather than assumed. Shapiro-Wilk tests reject normality at the five percent level for CAR, ROA, FDR and gross NPF, and fail to reject it for ROE and BOPO (Table 4) [21]. Because the Pearson coefficient assumes bivariate normality and is not robust to departures from it, Pearson results are reported for continuity with the prior literature but are not the basis of inference. Spearman rank correlation, which requires only a monotonic relationship, is reported alongside, and a divergence between the two is treated as a diagnostic signal to be resolved graphically rather than as evidence of outlier causation.

Three forms of uncertainty quantification are reported for each association. Fisher z intervals are given for continuity. Permutation p-values are obtained by resampling the pairing between variables 200,000 times under the null of independence, which makes no distributional assumption and is appropriate at $n = 12$. Bias-corrected and accelerated bootstrap intervals are computed from 20,000 paired resamples [22]. Where the three disagree, the resampling results are preferred and the disagreement is reported rather than resolved silently. Exact p-values are reported to four decimal places, and no p-value is reported as zero; the smallest observed value is given as 0.0001.

Eight correlation pairs are examined, so the probability of at least one spurious result at the nominal level is material. Holm step-down and Benjamini-Hochberg false discovery rate corrections are reported alongside the uncorrected values [23], [24], and inference is drawn from the corrected values. The corrections are applied to the parametric p-values, which is the more conservative choice for the pairs where the permutation value is smaller.

Influence is assessed systematically rather than through two hand-picked exclusions. Each key correlation is re-estimated twelve times, removing one bank at a time, and the full distribution of coefficients is plotted in Figure 2. Sensitivity tests additionally exclude BTPN Syariah and Bank Syariah Nasional, individually and jointly, for the structural reasons given in Table 3. Total assets are entered in logarithmic form as well as raw form, since the untransformed variable spans more than one order of magnitude.

With twelve units, statistical power is low: a moderate association would not reliably be detected, and an association that appears strong may rest on very few observations. Interpretation therefore emphasises interval estimates and consistency across specifications rather than threshold significance.

2.5 Disclosure audit protocol

To establish whether realised LCR or NSFR figures were disclosed voluntarily for 2025, the full text of each of the twelve annual reports was searched for the strings LCR, NSFR, liquidity coverage, net stable funding, kecukupan likuiditas and pendanaan stabil. Every match was read in context, and a bank was recorded as disclosing only where a realised percentage attributable to that bank at a stated position date was found. Mentions of the regulation, of industry averages or of internally monitored ratios without a value were recorded as non-disclosure.

3. Result and Discussion

3.1 The 2025 cross-section

Table 2. Supervisory ratios of Indonesian Islamic Commercial Banks, 2025

Bank	Total assets (IDR bn)	CAR (%)	ROA (%)	ROE (%)	BOPO (%)	FDR (%)	NPF gross (%)	NPF net (%)
Bank Syariah Indonesia	456,193	22.00	2.38	16.85	71.57	83.74	1.81	0.47
Bank Syariah Nasional	73,069	37.64	1.47	5.38	75.11	93.43	2.58	0.70
Bank Muamalat Indonesia	62,291	26.37	0.05	0.56	98.80	40.36	4.26	3.67
Bank Aceh Syariah	28,464	20.96	1.59	10.76	81.63	89.19	2.51	1.04
BTPN Syariah	22,751	57.74	7.15	12.96	70.26	84.79	2.59	0.02
BCA Syariah	19,207	27.7	1.5	6.7	80.6	85.5	1.57	0.22
Bank Mega Syariah	17,396	28.68	2.32	11.60	75.13	78.90	1.11	0.88
Bank NTB Syariah	17,302	21.28	0.11	0.33	99.03	86.90	3.40	0.89
Bank Jabar Banten Syariah	16,214	20.01	0.46	4.09	94.12	92.35	3.77	1.99
Bank Aladin Syariah	14,422	49.29	1.24	4.48	89.07	50.01	0.22	0.15
Nanobank Syariah	9,794	35.94	2.54	6.45	69.08	39.45	0.61	0.04
KB Bank Syariah	9,335	19.08	0.20	1.10	113.23	81.87	8.48	4.35

Source: bank-reported ratios traced to the pages recorded in Table A1 and drawn from references [25] to [36]. BCA Syariah reports its ratios to one decimal place; its figures are reproduced as published rather than padded to two. Bank Mega Syariah labels the efficiency ratio REO; it is the same supervisory construct as BOPO.

The industry is heterogeneous on every dimension. Total assets range from IDR 9.3 trillion at KB Bank Syariah to IDR 456.2 trillion at Bank Syariah Indonesia, a spread of more than 48 times. Performance dispersion is sharper still: ROA ranges from 0.05 to 7.15 percent and BOPO from 69.08 to 113.23 percent. One bank recorded a BOPO above 100 percent, meaning operating expenses exceeded operating income for the full year.

Table 4. Descriptive statistics and normality tests (n = 12)

Ratio	Mean	Median	Std. dev.	Min.	Max.	Shapiro-Wilk W	p
CAR (%)	30.56	27.04	12.40	19.08	57.74	0.844	0.031
ROA (%)	1.75	1.48	1.92	0.05	7.15	0.755	0.003
ROE (%)	6.77	5.92	5.27	0.33	16.85	0.937	0.460
BOPO (%)	84.80	81.11	14.01	69.08	113.23	0.915	0.248
FDR (%)	75.54	84.27	20.03	39.45	93.43	0.754	0.003
NPF gross (%)	2.74	2.54	2.19	0.22	8.48	0.859	0.048
NPF net (%)	1.20	0.79	1.43	0.02	4.35	-	-

Source: authors' calculation from Table 2. Standard deviations are sample values with $n - 1$ degrees of freedom. Shapiro-Wilk tests the null of normality; a p -value below 0.05 rejects it. NPF net is not used in inference and was not tested.

Reported CAR ranges from 19.08 to 57.74 percent with a mean of 30.56 percent and a median of 27.04 percent. What this does and does not establish requires care. An unweighted sample mean cannot show that each bank satisfies its own requirement, because the minimum is risk-based and bank-specific and the applicable buffers depend on each bank's supervisory classification. The supportable observation is narrower: every sampled bank reported a capital ratio well above the eight percent floor that forms the base of the requirement. Nor is a reported capital ratio a stress test or a measure of resilience; it is a point-in-time accounting ratio, and the claims in this article are confined accordingly. The rejection of normality for four of the six ratios tested is itself a finding, and it is the reason the inference in Section 3.4 does not rest on Pearson coefficients.

Capital and performance do not move together. The standard deviation of ROA of 1.92 percentage points against a mean of 1.75 percent implies a coefficient of variation above one, an unusual dispersion for a uniformly regulated industry. For every ratio except FDR the median lies below the mean, indicating right-skewed distributions in which a few banks pull the average upward.

3.2 Classification of the full sample

To avoid describing only part of the sample, all twelve banks are classified in Table 5 on the two variables that drive the analysis. The boundaries are descriptive and chosen to reflect visible clustering; they are not derived from a clustering algorithm, and the groups are illustrative rather than a claim about types of bank.

Table 5. Classification of all twelve sampled banks by operating cost ratio and return on assets

Group	Banks	BOPO range (%)	ROA range (%)	Defining feature
A. Contained cost, higher return	Nanobank, BTPNS, BSI, Mega	69.08-75.13	2.32-7.15	BOPO below 75.2 with ROA above 2.3
B. High capital, moderate return	BSN, Aladin	75.11-89.07	1.24-1.47	CAR above 37 with ROA below 1.5
C. Mid-range	BCA Syariah, Aceh	80.60-81.63	1.50-1.59	BOPO and ROA near sample median
D. Severe cost pressure	BJBS, Muamalat, NTBS, KBBS	94.12-113.23	0.05-0.46	BOPO above 94 with ROA below 0.5

Source: authors' classification from Table 2.

Group A spans micro and ultra-micro finance, digital banking, large-scale universal banking and retail consumer finance, which indicates that low cost ratios are not confined to one business model. Group D contains three of the four banks with the highest gross NPF. The three highest gross NPF values are KB Bank Syariah at 8.48 percent, Bank Muamalat Indonesia at 4.26 percent and Bank Jabar Banten Syariah at 3.77 percent, with Bank NTB Syariah fourth at 3.40 percent; an earlier draft of this analysis ranked these incorrectly and the correction is recorded here.

3.3 Two cases that illustrate the limits of the data

Bank NTB Syariah shows the sharpest single-year movement in the sample. Its ROA fell from 1.85 percent in 2024 to 0.11 percent in 2025 while gross NPF rose from 1.06 to 3.40 percent and BOPO from 80.57 to 99.03 percent, all as reported by the bank, and without a material change in asset scale. Attributing the fall specifically to impairment provisioning would require the impairment expense line, which the ratio table does not carry; the attribution is a hypothesis for testing, not a finding.

Bank Syariah Nasional illustrates a different limit. The bank publishes both reported and pro forma ratios for 2025. On the reported basis ROA is 1.47 percent, ROE 5.38 percent and BOPO 75.11 percent; on the pro forma basis, which restates the year as though the December 2025 integration had occurred at its start, the same ratios are 1.29 percent, 13.35 percent and 81.28 percent. The ROE difference is almost eightfold. This study uses the reported figures throughout, for consistency with the other eleven banks, but the existence of two defensible values for one bank-year is a caution against reading any single ratio in this table as a bare fact. The sensitivity tests in Section 3.5 exclude this bank for precisely that reason.

3.4 Associations

Table 6. Correlation results with interval estimates, permutation inference and multiple-testing corrections (n = 12)

Variable pair	Pearson r	Fisher 95% CI	Bootstrap BCa 95% CI	Perm. p	Holm	BH q	Spearman rho	Perm. p
BOPO - ROE	-0.785	[-0.937, -0.385]	[-0.909, -0.364]	0.0028	0.020	0.011	-0.797	0.0031
NPF gross - BOPO	0.782	[0.377, 0.936]	[0.177, 0.953]	0.0026	0.020	0.011	0.601	0.0434
CAR - ROA	0.721	[0.251, 0.916]	[0.159, 0.981]	0.0138	0.049	0.022	0.497	0.1035
BOPO - ROA	-0.695	[-0.907, -0.202]	[-0.894, -0.148]	0.0108	0.060	0.024	-0.916	0.0001
NPF gross - ROA	-0.351	[-0.770, 0.279]	[-0.761, 0.672]	0.1946	1.000	0.420	-0.587	0.0490
CAR - ROE	0.222	[-0.404, 0.706]	-	0.4920	1.000	0.652	0.371	0.2361
FDR - ROA	0.098	[-0.504, 0.636]	-	0.7627	1.000	0.798	-0.098	0.7655
Total assets - ROA	0.083	[-0.515, 0.627]	[-0.406, 0.662]	0.6700	1.000	0.798	0.182	0.5741

Source: authors' calculation in Python 3.11 with NumPy and SciPy. All tests two-sided. Permutation p-values from 200,000 resamples of the variable pairing under seed 2026; bootstrap intervals from 20,000 BCa resamples. Holm and BH are computed over the eight parametric p-values. Rows are ordered by Holm-adjusted p-value. Bootstrap intervals were not computed for the two pairs whose point estimates lie near zero.

After Holm correction only two associations remain significant: the inverse BOPO-ROE association and the positive gross NPF-BOPO association, both at an adjusted p of 0.020. The CAR-ROA association sits

marginally inside the threshold at 0.049 and the BOPO-ROA association marginally outside it at 0.060. Under the less conservative Benjamini-Hochberg criterion all four fall below a five percent false discovery rate. The divergence between the two procedures is reported rather than resolved in favour of whichever is more convenient, and no association in this table should be described as established.

The interval estimates are more informative than the point estimates. Every bootstrap interval is wide, and for gross NPF and ROA it spans from -0.761 to 0.672, which includes both strong negative and moderate positive associations. Even for the strongest relationship in the table, BOPO and ROE, the bootstrap interval runs from -0.909 to -0.364, so the data are consistent with anything from a near-deterministic relationship to a modest one. This is the expected consequence of twelve observations and is the reason the study is framed as exploratory.

Permutation and parametric p-values agree for the strongest associations but diverge materially elsewhere, confirming that the normal approximation cannot be relied upon here. The most consequential divergence concerns CAR-ROA, where the permutation p-value of 0.0138 is nearly twice the parametric value of 0.0081. The gross NPF-ROA and total assets-ROA pairs diverge in the opposite direction.

Figure 1 shows the four relationships that carry the analysis. Panel (a) shows BOPO and ROA as a tight, near-linear band with no single point governing the slope. Panel (b) shows gross NPF and BOPO with KB Bank Syariah at the upper extreme of both. Panel (c) makes the CAR-ROA problem visible: BTPN Syariah sits alone in the upper right and the remaining eleven banks form a cloud with little slope. Panel (d) shows that the absence of a scale effect persists under a logarithmic transformation.

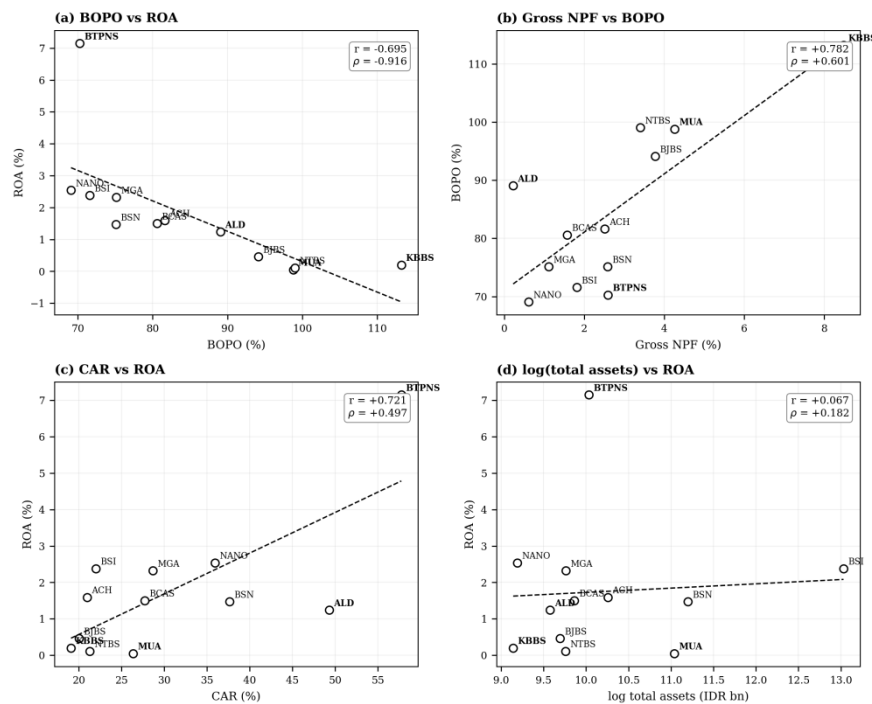


Figure 1. Scatterplots of the principal variable pairs, with ordinary least squares fit, Pearson r and Spearman ρ ($n = 12$)

Source: authors' calculation. Abbreviations: BSI Bank Syariah Indonesia; BSN Bank Syariah Nasional; MUA Bank Muamalat Indonesia; ACH Bank Aceh Syariah; BTPNS BTPN Syariah; BCAS BCA Syariah; MGA Bank Mega Syariah; NTBS Bank NTB Syariah; BJBS Bank Jabar Banten Syariah; ALD Bank Aladin Syariah; NANO Nanobank Syariah; KBBS KB Bank Syariah.

The CAR-ROA pattern shows why the graphical check matters. The Pearson coefficient of 0.721 looks strong while the Spearman coefficient is 0.497 and not significant at a permutation p of 0.104. The divergence signals that the two measures respond to different features of the data, and panel (c) identifies the feature. The reverse pattern appears for gross NPF and ROA, where the rank correlation is significant at a permutation p of 0.049 while the Pearson coefficient is not. That rank result sits so close to the threshold, and its bootstrap interval is so wide, that it should not be treated as established; it survives neither correction.

Asset scale shows no detectable association with profitability under either measure, in raw form or in logarithmic form. This is not evidence that none exists. The bootstrap interval runs from -0.406 to 0.662, which is consistent with moderate associations in either direction; the correct statement is that these data cannot detect an association, not that there is none. The result is nonetheless consistent with Athanasoglou et al. [4], who identified size as the only bank-specific determinant without a significant effect, and with Cihak and Hesse [7].

3.5 Influence diagnostics

Table 7. Sensitivity and leave-one-out diagnostics

Variable pair	Full (n=12)	Excl. BTPNS (n=11)	Excl. BSN (n=11)	Excl. both (n=10)	LOO range of r	Sig. in k of 12
BOPO - ROA	-0.695*	-0.924***	-0.724*	-0.940***	-0.667 to -0.924	12
BOPO - ROE	-0.785**	-0.757**	-0.826**	-0.800**	-	-
NPF gross - BOPO	0.782**	0.820**	0.796**	0.843**	0.586 to 0.880	11
CAR - ROA	0.721**	0.328	0.742**	0.322	0.328 to 0.868	11
NPF gross - ROA	-0.351	-0.714*	-0.353	-0.714*	-	-
Total assets - ROA	0.083	0.368	0.084	0.368	-	-
log(total assets) - ROA	0.067	0.243	0.083	0.232	-	-

Source: authors' calculation. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, uncorrected two-sided. LOO range gives the smallest and largest coefficient across the twelve leave-one-out subsamples. BTPNS = BTPN Syariah; BSN = Bank Syariah Nasional.

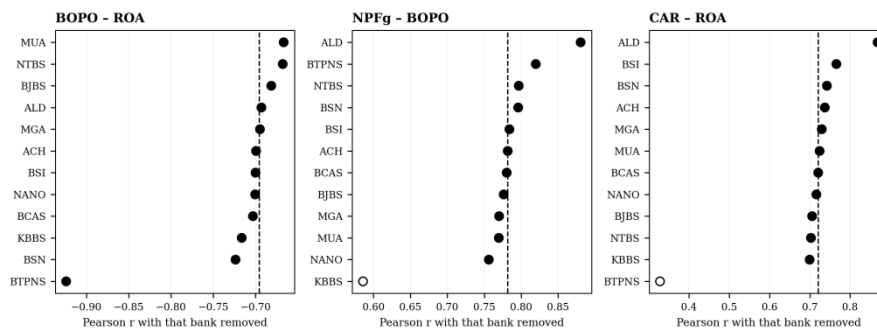


Figure 2. Leave-one-out influence diagnostics. Each point is the Pearson coefficient with the named bank removed; the dashed line is the full-sample coefficient. Filled points are significant at the uncorrected five percent level, hollow points are not.

Source: authors' calculation.

The diagnostics separate robust from fragile findings sharply. The BOPO-ROA association is significant in all twelve subsamples and never weakens beyond -0.667, so no single bank sustains it. The gross NPF-BOPO association is significant in eleven of twelve and weakens to 0.586 with a p of 0.058 when KB Bank Syariah is removed, which is expected given that bank's position in Figure 1(b).

The CAR-ROA association is also significant in eleven of twelve, but the single failure is decisive rather than incidental. Removing BTPN Syariah more than halves the coefficient, from 0.721 to 0.328 with a p of 0.325, whereas removing any other bank leaves it at 0.70 or above. Excluding Bank Syariah Nasional instead leaves it essentially unchanged at 0.742. P3 is therefore not supported robustly. The conclusion that stronger capital drives profitability cannot be drawn from these data, although neither is it refuted; the cross-section provides insufficient evidence either way. The permutation p -value, nearly twice the parametric one, points in the same direction, as does the bootstrap interval reaching 0.981.

This outcome converges with Nisa' et al. [14], who likewise reported no significant effect of CAR on the profitability of Indonesian Islamic banks while confirming significant negative effects for NPF and BOPO. A panel covering 2014-2018 and a cross-section for 2025 arrive at the same ordering of determinants. The divergence from Berger [5] is instructive rather than contradictory: capital ratios here average more than three times the base regulatory floor, so the mechanisms through which capital lowers funding costs and expected distress costs are unlikely to bind at the margin.

3.6 Voluntary disclosure of LCR and NSFR in the pre-regime year

The disclosure audit described in Section 2.5 produced a result that contradicts the expectation stated in Section 1. Three of the twelve banks disclosed a realised LCR for the 2025 position and two disclosed a realised NSFR, in advance of any obligation to do so.

Table 8. Voluntary disclosure of realised LCR and NSFR for the 2025 position

Bank	Realised LCR at 31 Dec 2025	Realised NSFR at 31 Dec 2025	Where disclosed
Bank Syariah Indonesia	200.97% (2024: 213.23%)	Not disclosed	Management discussion, liquidity section
BTPN Syariah	429.85%	227.66%	Management discussion, liquidity section
Nanobank Syariah	306.42%	176.74%	Management discussion, liquidity ratio section
Other nine banks	Not disclosed	Not disclosed	Regulation described; no realised value

Source: authors' full-text search of the twelve annual reports, 28 September 2026. A bank is recorded as disclosing only where a realised percentage attributable to that bank at a stated position date was found.

This finding has three implications. First, an earlier draft of this analysis asserted that no bank published these ratios and that data would first become available in 2026. That assertion was unsupported and is withdrawn: regulatory reporting start dates govern when disclosure becomes mandatory and say nothing about voluntary practice. Second, the disclosing banks are the ones with the most comfortable positions, reporting ratios between two and more than four times the eventual 100 percent requirement, which is consistent with disclosure being a signalling choice available mainly to banks with headroom. Third, because disclosure is selective in this way, the three observed values cannot be treated as a sample of industry liquidity; they establish that disclosure occurred, not what the undisclosed nine would have reported.

FDR is sometimes used as an indirect proxy for liquidity, but its use must be tightly bounded. FDR compares financing to third-party funds on a static basis, whereas LCR measures high-quality liquid assets against net cash outflows under a 30-day stress scenario and NSFR measures available against required stable funding. The three have no direct arithmetic relationship, and a bank with low FDR need not have high LCR if its liquid assets fail the quality criteria in Articles 5 to 7 of the regulation [1]. This study therefore does not rank liquidity readiness on FDR. The three disclosed LCR values support that caution: BTPN Syariah has the highest disclosed LCR at 429.85 percent with an FDR of 84.79 percent, while Nanobank Syariah has a much lower FDR at 39.45 percent and a lower LCR at 306.42 percent, so the two measures do not even rank these banks consistently.

3.7 Interpretation and alternative explanations

The empirical findings of this study are the associations in Table 6 together with their intervals, corrected p-values and influence diagnostics. The following interpretation is offered separately, as a candidate explanation these data are not designed to test.

A provisioning channel would explain the observed pattern. Deteriorating financing quality enters the income statement as impairment expense, which raises BOPO, and elevated BOPO accompanies lower profitability. The observed positive gross NPF-BOPO association is consistent with the first step of that chain, and Ali et al. [13], who treat asset quality and cost efficiency as joint determinants, point the same way. But a correlation between two ratios at one date does not identify a mechanism. Establishing the provisioning channel would require evidence this study does not have: temporal ordering showing NPF movements preceding cost movements, a decomposition of BOPO separating impairment expense from overhead, or a mediation design. The accounting pathway is theoretically plausible; it is not empirically established here, and the two claims are kept apart throughout.

Several alternative explanations remain open for the whole cross-bank pattern, and each would generate similar correlations without any of the relationships proposed above. Ownership differs across the sample: state-owned, regional-government-owned, domestically private and foreign-affiliated banks face different funding costs, different governance and different implicit support. Business model differs: a bank lending to ultra-

micro borrowers earns margins several times those of a corporate lender and carries a correspondingly different cost and impairment structure, which alone could produce the position of BTPN Syariah in Figure 1(c) without any capital-profitability relationship. Customer segment and the associated provisioning policy differ, and banks applying more conservative expected-loss assumptions will report higher impairment expense for identical portfolios. Consolidation status differs, as Table 3 records: two banks report consolidated figures and the rest individual ones. Reporting scope and precision differ, with one bank publishing to one decimal place and another publishing two defensible versions of the same year. Institutional history differs, with one bank in the sample having existed in its current form for only three months of the year observed.

None of these is controlled, and with twelve observations none can be. They are listed not as a formal limitation but because any of them could generate the entire pattern reported here, and a reader is entitled to weigh them against the interpretation offered above.

4. Conclusion

Four conclusions follow from twelve of the thirteen Indonesian Islamic Commercial Banks operating at 31 December 2025. First, every sampled bank reported a capital ratio well above the eight percent floor, with reported CAR ranging from 19.08 to 57.74 percent; whether each bank meets its own risk-based requirement and buffers is not established by these data, and a reported capital ratio is not a measure of resilience under stress. Second, performance dispersion is wide, with ROA ranging from 0.05 to 7.15 percent and BOPO from 69.08 to 113.23 percent, and the distributions of four of six ratios depart from normality.

Third, only two associations survive correction for multiple testing: the inverse relationship between the operating cost ratio and return on equity, and the positive relationship between gross NPF and the operating cost ratio. The apparent relationship between capital adequacy and profitability is produced by a single bank and does not survive its removal. Asset scale shows no detectable association with profitability in either raw or logarithmic form, although the interval is too wide to exclude one. All of these are associations in a cross-section of twelve banks with wide interval estimates, and none should be read as a determinant.

Fourth, the pre-regime year is not uniformly undisclosed. Three banks published realised LCR figures for 2025 and two published NSFR, before any obligation applied. Because the disclosing banks are those with the largest headroom, this establishes that voluntary disclosure occurred without supporting any inference about the industry.

The study has seven limitations. The sample of twelve yields low power, so associations are indicative and intervals are wide. The single-year cross-sectional design cannot capture dynamics or identify causal direction. The bivariate design cannot control for ownership, business model, customer segment, provisioning policy or reporting scope, any of which could generate the observed pattern. BOPO shares income-statement components with ROA and ROE, so part of those associations is an accounting identity. One bank of thirteen is excluded for incomplete disclosure, and that exclusion is not random. Two banks report on a consolidated basis and one publishes two defensible sets of ratios. The disclosure audit covers the twelve analysed banks only.

Future research should adopt a multi-year panel once LCR and NSFR become available for the positions in Table 1, allowing liquidity readiness to be tested directly and dynamic estimators of the kind used by Athanasoglou et al. [4] to be applied; decompose BOPO into impairment expense and overhead so the provisioning channel can be tested rather than inferred; and incorporate ownership, business model and institutional status as controls once the panel dimension supplies the degrees of freedom to do so.

Acknowledgements

The authors thank Stebis Al Ulum Terpadu Medan, Islamic Banking Program, for the institutional support that made this research possible. The authors also acknowledge the Financial Services Authority of Indonesia and

the twelve Islamic Commercial Banks whose publicly disclosed annual reports form the entire empirical basis of this study.

Author Contributions

F.Y.: conceptualisation, methodology, formal analysis, data curation, writing of the original draft, and revision. M.A.A.: data curation, independent verification of every value in Table 2 against its source page, validation, and review and editing of the manuscript. Both authors read and approved the submitted version and accept responsibility for its content.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics Statement

Ethical approval was not required. The study analyses only aggregate financial ratios published by corporate entities in their own annual reports and regulations issued by a public authority. No human participants, personal data, or animal subjects were involved, and no proprietary or supervisory data were accessed.

Conflict of Interest

The authors declare no financial or non-financial conflict of interest with respect to the research, authorship, or publication of this article. Neither author holds an employment relationship, consultancy engagement, shareholding, or other material interest in any bank included in the sample.

Data Availability

All data are secondary and publicly available from the annual reports listed in references [25] to [36] and from the regulations in references [1] and [2]. The assembled dataset of twelve banks and eight variables is reproduced in full in Table 2 of this article, and the complete analysis code, including the permutation, bootstrap and leave-one-out routines with the fixed seed reported in Section 2.4, is available from the corresponding author on request and will be deposited in a public repository on acceptance.

Appendix A. Data provenance

Table A1. Source location, page and reporting scope for every bank in the sample

Bank	Ratio table: section and page	Assets: page	Reporting scope	Ref.
Bank Syariah Indonesia	Ikhtisar Data Keuangan Penting, p. 22 (FDR, NPF, BOPO, ROA, ROE); p. 23 (KPMM)	19	Individual	[25]
Bank Syariah Nasional	Kilas Kinerja, p. 20 (FDR); p. 21 (ROA, ROE, BOPO, NPF, KPMM)	20	Individual	[26]
Bank Muamalat Indonesia	Rasio Keuangan Penting, p. 11; NPF gross from MD&A, p. 196	12	Consolidated	[27]
Bank Aceh Syariah	Ikhtisar Keuangan dan Rasio Keuangan, p. 34	32	Individual	[28]
BTPN Syariah	Ikhtisar Keuangan, p. 18 (KPMM, NPF); p. 19 (ROA, ROE, BOPO, FDR)	18	Consolidated	[29]
BCA Syariah	Rasio Keuangan, p. 18	15	Individual	[30]
Bank Mega Syariah	Rasio Keuangan, p. 15	14	Individual	[31]
Bank NTB Syariah	Rasio Keuangan, p. 17	15	Individual	[32]
Bank Jabar Banten Syariah	Rasio Keuangan, p. 25; FDR p. 26	23	Individual	[33]
Bank Aladin Syariah	Rasio Kinerja, p. 19 (KPMM, NPF, ROA, ROE); p. 20 (BOPO, FDR)	17	Individual	[34]
Nanobank Syariah	Rasio Keuangan, p. 4	3	Individual	[35]
KB Bank Syariah	Rasio-Rasio Keuangan, p. 16	14	Individual	[36]

Source: authors' verification against the source documents, 28 September 2026. Page numbers refer to the printed pagination of each report. Both authors located every value independently and resolved disagreements by returning to the source page. Stable URLs for each report are given in references [25] to [36]; all were accessed on 28 September 2026. Ratios are taken as published and are not recomputed, so no reconciliation rule was applied; the only variable drawn from outside the financial highlights section is the gross NPF of Bank Muamalat Indonesia, whose page is recorded separately above.

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