

THE INFLUENCE OF CREDIT RISK, LIQUIDITY, AND COST OF FUNDS ON PROFITABILITY PERFORMANCE (A STUDY AT PT BANK TABUNGAN NEGARA (PERSERO) Tbk)

Rani Rachmawati^{1*}, Sri Sutrismi²
ranirachma1802@gmail.com^{*}
Universitas Tulungagung, Indonesia^{1,2}

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Abstract

Bank profitability in Indonesia has been shaped by considerable volatility in credit risk, liquidity, and funding costs across the pre-pandemic, pandemic, and post-tightening periods between 2015 and 2025. This study aims to analyze the effect of credit risk, liquidity, and cost of funds on the financial performance of PT Bank Tabungan Negara (Persero) Tbk over the 2015–2025 period, both partially and simultaneously. The study draws on 44 quarterly observations derived from Bank BTN's published, audited financial and annual reports, and the relationships among constructs are estimated using Partial Least Squares–Structural Equation Modeling (PLS-SEM) processed through SmartPLS. The results show that credit risk has a significant negative effect on financial performance, while liquidity and cost of funds have no significant effect. The coefficient of determination indicates that the three variables jointly account for only a limited proportion of the variation in financial performance, so their simultaneous influence should be interpreted as modest rather than dominant, with most of the variation attributable to factors outside the model. These findings suggest that credit risk governance should be prioritised as the primary lever for sustaining bank profitability, offering practical guidance for bank management and for the Otoritas Jasa Keuangan in strengthening asset-quality-focused supervisory frameworks.

Keywords: Credit Risk, Liquidity, Cost of Funds, Financial Performance, PLS-SEM

*Correspondence Author



By Authors

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1. Introduction

The Indonesian banking industry experienced significant dynamics throughout the 2015–2025 period, shaped by a confluence of global economic slowdowns, the COVID-19 pandemic, and shifts in domestic monetary policy (Otoritas Jasa Keuangan, 2023). These conditions directly and simultaneously

affected three fundamental pillars of bank performance: credit risk, liquidity, and cost of funds. During the pandemic period of 2020–2021, the national non-performing loan (NPL) ratio rose sharply as borrowers' repayment capacity deteriorated, compelling banks to increase their loan loss provisions (CKPN) and placing downward pressure on net income (Athanasoglou et al., 2008; Basel Committee on Banking Supervision, 2013). Simultaneously, the interest rate tightening cycle of 2022–2023 elevated funding costs and compressed net interest margins (NIM) across the industry (Bank Indonesia, 2022). These interrelated pressures underscore the importance of examining credit risk, liquidity, and cost of funds not as isolated variables, but as a system of interconnected determinants of bank profitability.

PT Bank Tabungan Negara (Persero) Tbk, Bank BTN, presents a particularly relevant and strategic case in this context. As Indonesia's state-owned bank specialising in mortgage and consumer credit financing, BTN operates within a business segment that is inherently sensitive to macroeconomic cycles, housing market conditions, and government housing finance programs. The bank's aggressive credit growth during the study period was accompanied by fluctuations in Loan to Deposit Ratio (LDR), where excessively loose liquidity conditions risked creating idle funds that suppressed efficiency, while excessively tight liquidity heightened funding risk. At the same time, rising benchmark interest rates placed direct upward pressure on the bank's cost of funds, and NPL levels exceeding 3% during the pandemic period triggered elevated CKPN requirements that weighed on profitability (Otoritas Jasa Keuangan, 2023). These dynamics collectively illustrate that bank financial performance reflected in Return on Assets (ROA) and NIM is not determined by any single factor, but by the interaction among these three fundamental variables.

Theoretically, bank profitability can be understood through the lens of Financial Intermediation Theory, which positions banks as intermediaries between surplus and deficit economic units whose effectiveness depends on optimal management of liquidity, credit risk, and funding costs (Freixas & Rochet, 2008). Risk Management Theory further emphasises that deteriorating credit asset quality, as reflected in rising NPL and CKPN ratios, is a primary determinant of bank instability and earnings decline (Hull, 2018; Saunders & Allen, 2020). Meanwhile, Cost of Capital Theory posits that when funding costs rise faster than asset yields, net interest margins contract and profitability declines — a dynamic that is particularly relevant in the context of Indonesia's

post-pandemic monetary tightening (Khan et al., 2021). Taken together, these three theoretical frameworks converge on the proposition that profitability is jointly determined by the bank's ability to manage liquidity efficiency, credit quality, and funding cost structure.

Despite an extensive body of literature on bank profitability determinants, empirical findings remain inconsistent and collectively reveal three identifiable research gaps. The first gap is empirical inconsistency: studies examining liquidity measured through LDR report conflicting directions of effect, with some finding a positive relationship through increased interest income (Athanasoglou et al., 2008; Dietrich & Wanzenried, 2011), others finding that excessively high LDR amplifies liquidity risk and harms financial performance (Petria et al., 2015; Trujillo-Ponce, 2013), and still others finding no significant effect under conditions of macroeconomic uncertainty. Similarly, although credit risk is broadly documented to negatively affect profitability through increased provisioning, several studies found that banks maintained adequate profitability during the COVID-19 credit restructuring period despite rising NPL ratios, suggesting that the credit risk-profitability relationship is moderated by risk management policies and macroeconomic conditions. Regarding cost of funds, while theory and evidence generally point to a negative effect on NIM and profitability, some studies document that banks with effective asset repricing and operational efficiency strategies were able to preserve margins despite rising funding costs – indicating that the relationship is not always direct or linear. The second gap is contextual: most prior studies employed cross-bank panel data approaches, meaning that few have specifically examined a single large state-owned bank over a long period covering the pre-pandemic, pandemic, and post-monetary tightening phases – a context that captures the full volatility of the Indonesian banking cycle. The third gap is methodological: the majority of prior studies relied on conventional regression techniques that test each variable separately, and relatively few have examined credit risk, liquidity, and cost of funds simultaneously within a single structural model that captures their integrated effects on financial performance (Trujillo-Ponce, 2013).

This study therefore addresses these three gaps through a contextual, integrative, and methodological contribution. Contextually, it focuses exclusively on Bank BTN Indonesia's largest state-owned housing finance bank over the 2015–2025 period, providing a longitudinal single-bank perspective that captures the full cycle of economic expansion, pandemic disruption, and

monetary tightening. Integratively, it examines credit risk, liquidity, and cost of funds simultaneously as a coherent system of profitability determinants, rather than as isolated variables. Methodologically, it employs Partial Least Squares-Structural Equation Modeling (PLS-SEM) through SmartPLS an approach suited for models with multiple latent constructs and reflective indicators that does not require multivariate normality assumptions, and which is specifically designed to assess both measurement reliability and structural relationships within a single analytical framework (Hair et al., 2019; Henseler, 2021). The findings are expected to provide practical guidance for bank management in prioritising credit risk governance as a core profitability lever, and to support regulators particularly the Otoritas Jasa Keuangan in designing supervisory frameworks that reinforce asset quality and systemic financial stability. Stated explicitly, the theoretical contribution of this study lies in jointly testing Financial Intermediation Theory, Risk Management Theory, and Cost of Capital Theory within a single structural model estimated for a state-owned housing-finance bank, whereas most prior work tests these theories separately or through cross-bank panel regressions. The empirical contribution lies in providing longitudinal, single-bank PLS-SEM evidence for Bank BTN across the full 2015–2025 cycle covering pre-pandemic, pandemic, and post-tightening conditions, a combination of context, integration, and method that has not been jointly examined in prior banking profitability research.

2. Research Method

This study adopts a quantitative descriptive research design, which is considered appropriate given the objective of examining the magnitude and direction of relationships among measurable financial variables namely credit risk, liquidity, cost of funds, and financial performance over an extended time horizon (Saunders et al., 2022). The quantitative approach enables systematic, replicable analysis of numerical data derived from official financial reports, while the descriptive dimension allows for meaningful interpretation of patterns and tendencies observed within the data.

The research object is PT Bank Tabungan Negara (Persero) Tbk, a state-owned bank listed on the Indonesia Stock Exchange with a primary business focus on mortgage and consumer credit financing. Bank BTN was selected because its distinctive business model centred on housing finance makes it

particularly sensitive to fluctuations in credit quality and funding costs, and it occupies a strategically important position within Indonesia's national housing finance ecosystem (Otoritas Jasa Keuangan, 2023). The study covers the period from 2015 to 2025, encompassing 44 quarterly observations. This timeframe was deliberately chosen to capture a full economic cycle that includes the pre-pandemic growth phase, the disruption of COVID-19 in 2020–2021, the monetary tightening cycle of 2022–2023, and the subsequent recovery period, thereby enabling a more robust and contextually rich empirical analysis (Bank Indonesia, 2022).

Data were obtained entirely from secondary sources, specifically the quarterly financial reports and annual reports published by Bank BTN through the Indonesia Stock Exchange and the bank's official website. These reports are audited and publicly accessible, ensuring the reliability and objectivity of the data. The use of secondary financial data from published reports is a well-established approach in banking performance research, as it provides standardised and comparable figures across periods (Sufian & Habibullah, 2021).

The study employs four latent constructs measured through observable financial indicators. Credit risk is measured using Non-Performing Loan (NPL), which reflects the proportion of problematic loans relative to total loans outstanding, and Cadangan Kerugian Penurunan Nilai (CKPN), which represents the bank's loan loss provision (Basel Committee on Banking Supervision, 2013). Liquidity is measured through Loan to Deposit Ratio (LDR), capturing the extent to which third-party funds are channelled into loans, and Cash Ratio, reflecting the bank's immediate liquidity buffer (Freixas & Rochet, 2008). Cost of funds is operationalised using Cost of Fund (COF), representing the average interest cost on interest-bearing liabilities, and Inefficiency Expense Ratio (IER), which reflects operating cost efficiency as a proxy for funding inefficiency (Khan et al., 2021). Financial performance, as the dependent variable, is measured through Return on Assets (ROA) and Net Interest Margin (NIM), both of which are widely used indicators of bank profitability in the empirical literature (Athanasoglou et al., 2008; Lee & Hsieh, 2020).

The analytical method used in this study is Partial Least Squares-Structural Equation Modeling (PLS-SEM), implemented through SmartPLS software. This method was selected for several reasons. PLS-SEM is well-suited for research models involving multiple latent variables with reflective indicators, performs reliably with moderate sample sizes, and does not require the

assumption of multivariate normality an advantage in financial time-series contexts where data distributions may deviate from normality (Hair et al., 2019). Unlike covariance-based SEM, PLS-SEM emphasises predictive relevance and is particularly appropriate when the research objective is to explain variance in the dependent variable (Henseler, 2021). PLS-SEM was preferred over conventional single-equation regression for two additional reasons specific to this dataset. First, with only 44 quarterly observations, PLS-SEM's variance-based estimation is more robust to the small-sample and non-normality conditions typical of time-series financial data than covariance-based or ordinary least squares regression, which generally require larger samples and normally distributed residuals to yield reliable estimates (Hair et al., 2019). Second, credit risk, liquidity, and cost of funds are each represented by two correlated financial ratios rather than a single indicator; modelling each pair as a reflective latent construct allows the shared variance common to both ratios to be captured as the underlying construct, and allows measurement error in the individual ratios to be separated from the structural relationships among constructs an option not available when each ratio is entered directly as a separate regressor in conventional regression. Conceptually, this treatment follows standard practice in banking and finance research, where audited ratios such as NPL and CKPN, or LDR and Cash Ratio, are regarded as observable manifestations of a broader underlying condition credit quality, liquidity position, or funding cost rather than as ends in themselves, which justifies specifying them as reflective indicators of a single latent variable instead of testing each ratio's effect in isolation (Hair et al., 2019; Henseler, 2021).

The analytical process proceeded through two sequential stages. The first stage involved evaluation of the measurement model (outer model) to assess construct validity and reliability. Convergent validity was assessed through outer loading values, where a threshold greater than 0.70 is considered acceptable; Average Variance Extracted (AVE), where a value exceeding 0.50 indicates adequate convergent validity; and Composite Reliability (CR), where a value above 0.70 confirms internal consistency of the construct (Hair et al., 2019). The second stage involved evaluation of the structural model (inner model) through the coefficient of determination (R^2), Effect Size (f^2), and Predictive Relevance (Q^2), where a positive Q^2 value confirms meaningful predictive capability of the model (Henseler, 2021).

Hypothesis testing was conducted using the bootstrapping procedure within SmartPLS, which generates path coefficients, t-statistics, and p-values without requiring distributional assumptions (Hair et al., 2019). A hypothesis is accepted as statistically significant when the t-statistic exceeds 1.96 and the p-value is below 0.05, consistent with the 95% confidence level conventionally applied in management and finance research (Saunders et al., 2022). The direction of each path coefficient further indicates whether the relationship between a predictor and financial performance is positive or negative, providing substantive interpretation beyond mere statistical significance.

3. Result and Discussion

Descriptive Statistics

The descriptive statistical analysis was conducted to provide an overview of the central tendency and dispersion of each research variable over the 44 quarterly observation periods from 2015 to 2025. The results are presented in the following tables.

Table 1. Descriptive Statistics of Credit Risk Variables

Indicator	N	Min	Max	Mean	Std. Deviation
NPL	44	2.30	4.80	3.261	0.631
CKPN	44	1.20	3.50	2.114	0.587

Source: Research Data, 2026

Based on Table 1, the NPL variable recorded a minimum value of 2.30% and a maximum of 4.80%, with a mean of 3.261% and a standard deviation of 0.631. This indicates that during the study period, credit quality experienced notable fluctuation, with the highest NPL levels recorded during the 2020–2021 pandemic period when borrower repayment capacity deteriorated significantly (Otoritas Jasa Keuangan, 2023). The CKPN variable recorded a mean of 2.114% with a standard deviation of 0.587, reflecting the bank's increasing provisioning burden during periods of elevated credit risk. An increase in CKPN directly reduces net profit, as provisions are charged to the income statement before profit is calculated (Athanasoglou et al., 2008; Basel Committee on Banking Supervision, 2013).

Table 2. Descriptive Statistics of Liquidity Variables

Indicator	N	Min	Max	Mean	Std. Deviation
LDR	44	100.00	106.00	103.207	1.717
Cash Ratio	44	11.50	19.00	14.455	2.397

Source: Research Data, 2026

Table 2 shows that the LDR variable ranged from 100.00% to 106.00%, with a mean of 103.207% and a standard deviation of 1.717, indicating a relatively stable level of loan disbursement relative to third-party funds throughout the study period. The Cash Ratio recorded a minimum of 11.50% and a maximum of 19.00%, with a mean of 14.455% and a standard deviation of 2.397, suggesting a gradual improvement in the bank's immediate liquidity position. According to Liquidity Management Theory, a bank must maintain a balance between liquidity and profitability, as excessive liquidity may lead to idle funds that reduce returns, while insufficient liquidity increases the risk of default on short-term obligations (Freixas & Rochet, 2008).

Table 3. Descriptive Statistics of Cost of Funds Variables

Indicator	N	Min	Max	Mean	Std. Deviation
COF	44	4.05	5.40	4.870	0.410
IER	44	79.00	88.00	83.643	2.451

Source: Research Data, 2026

As shown in Table 3, the Cost of Fund (COF) variable recorded a mean of 4.870% with a standard deviation of 0.410, reflecting relatively stable funding costs throughout the observation period. The Inefficiency Expense Ratio (IER) recorded a mean of 83.643% and a standard deviation of 2.451, indicating variation in the bank's operational cost efficiency across quarters. According to Cost of Capital Theory, higher funding costs that are not offset by increased asset yields will compress net interest margins and reduce overall profitability (Khan et al., 2021).

Table 4. Descriptive Statistics of Financial Performance Variables

Indicator	N	Min	Max	Mean	Std. Deviation
ROA	44	0.95	1.88	1.362	0.242
NIM	44	3.80	4.82	4.357	0.319

Source: Research Data, 2026

Table 4 shows that ROA ranged from 0.95% to 1.88% with a mean of 1.362%, reflecting the bank's capacity to generate profit from its asset base across varying economic conditions. NIM ranged from 3.80% to 4.82% with a

mean of 4.357%, indicating the bank's ability to maintain a positive spread between interest income and interest costs. Both indicators are widely used measures of bank profitability in the empirical literature (Athanasoglou et al., 2008; Lee & Hsieh, 2020).

Measurement Model Evaluation (Outer Model)

Prior to testing the structural hypotheses, the measurement model was evaluated to confirm the validity and reliability of all constructs. This evaluation followed the criteria established by Hair et al. (2019) for PLS-SEM analysis.

Table 5. Outer Loading of Indicators

Variable	Indicator	Loading Factor
Credit Risk	CKPN	0.995
	NPL	0.245
Liquidity	LDR	0.998
	Cash Ratio	0.217
Cost of Funds	COF	0.990
	IER	0.122
Financial Performance	ROA	0.945
	NIM	0.251

Source: Research Data, 2026

As presented in Table 5, several indicators specifically CKPN, LDR, COF, and ROA recorded outer loading values above the 0.70 threshold, confirming their strong contribution to their respective latent constructs (Hair et al., 2019). In contrast, indicators including NPL, Cash Ratio, IER, and NIM returned relatively low loading values. While these figures fall below the ideal threshold, the indicators are retained in the model given their strong theoretical grounding as widely recognised measures in banking performance analysis (Freixas & Rochet, 2008; Saunders & Allen, 2020). In PLS-SEM, indicators with lower loadings may still be retained when their theoretical relevance is well-established and when the overall construct reliability remains acceptable (Henseler, 2021).

Table 6. Average Variance Extracted (AVE)

Variable	AVE
Credit Risk	0.525
Liquidity	0.522
Cost of Funds	0.498
Financial Performance	0.478

Source: Research Data, 2026

Table 6 shows that Credit Risk and Liquidity met the AVE threshold of greater than 0.50, indicating adequate convergent validity for these constructs. Cost of Funds and Financial Performance recorded AVE values slightly below 0.50. While this falls marginally short of the ideal criterion, it remains acceptable when Composite Reliability values are satisfactory, as noted by Hair et al. (2019).

Table 7. Composite Reliability (CR)

Variable	Composite Reliability
Credit Risk	0.681
Liquidity	0.677
Cost of Funds	0.660
Financial Performance	0.638

Source: Research Data

As shown in Table 7, the Composite Reliability values for all constructs ranged between 0.638 and 0.681, approaching but not fully reaching the ideal threshold of 0.70. This indicates that the internal consistency of the constructs is at a moderate level. In the context of exploratory financial research with a limited number of indicators per construct, these values are considered acceptable (Henseler, 2021).

Taken together, the measurement model results indicate a genuine trade-off rather than a fully satisfactory outer model: one indicator per construct (CKPN, LDR, COF, ROA) loads strongly while its counterpart (NPL, Cash Ratio, IER, NIM) loads weakly, and AVE and Composite Reliability for two of the four constructs fall short of the conventional 0.50 and 0.70 thresholds respectively. Re-specifying the model by dropping the weaker indicators was considered, but was not adopted because doing so would reduce each construct to a single-item measure and would remove ratios (NPL, Cash Ratio, IER, NIM) that are conventionally reported alongside their paired ratio in Indonesian banking disclosure and prior profitability studies (Athanasoglou et al., 2008; Freixas & Rochet, 2008); retaining both indicators

therefore preserves construct content validity at the cost of lower loadings for the weaker item. These moderate reliability and validity figures constitute a genuine limitation of the study: they imply that the latent constructs capture a narrower share of common variance than an ideal measurement model would, so the path estimates in the structural model that follows should be interpreted as indicative of direction and relative magnitude rather than as precise population parameters, and generalization of the measurement structure to other banks or datasets should be made cautiously until it is corroborated with larger samples or additional indicators.

Structural Model Evaluation (Inner Model)

Table 8. R-Square, Effect Size, and Predictive Relevance

Indicator	Value	Category
R ² (Financial Performance)	0.113	Weak
Q ² (Financial Performance)	0.113	Positive
f ² Credit Risk → Financial Performance	0.096	Small
f ² Liquidity → Financial Performance	0.004	Very Small
f ² Cost of Funds → Financial Performance	0.012	Small

Source: Research Data, 2026

The R² value of 0.113 indicates that credit risk, liquidity, and cost of funds collectively explain 11.3% of the variation in financial performance, while the remaining 88.7% is attributed to other variables outside the model. According to the criteria of Hair et al. (2019), R² values of 0.75, 0.50, and 0.25 represent strong, moderate, and weak explanatory power respectively, placing this model in the weak category. However, this is a common and accepted outcome in banking and financial management research, where profitability is inherently influenced by a broad range of complex factors including macroeconomic conditions, regulatory policy, operational efficiency, and digital transformation (Sufian & Habibullah, 2021). The Q² value of 0.113, being greater than zero, confirms that the model retains meaningful predictive relevance for the dependent variable (Henseler, 2021).

Hypothesis Testing

Table 9. Path Coefficients and Hypothesis Testing Results

Relationship	Path Coefficient	t-Statistic	p-Value	Decision
Credit Risk → Financial Performance	-0.304	2.105	0.036	Accepted
Liquidity → Financial Performance	-0.061	0.842	0.400	Rejected

Relationship	Path Coefficient	t-Statistic	p-Value	Decision
Cost of Funds → Financial Performance	-0.114	1.215	0.225	Rejected

Source: Research Data, 2026

Effect of Credit Risk on Financial Performance

The results in Table 9 show that credit risk has a negative and significant effect on the financial performance of Bank BTN, with a path coefficient of -0.304, a t-statistic of 2.105 exceeding the threshold of 1.96, and a p-value of 0.036 below 0.05. This finding indicates that an increase in credit risk reflected by rising NPL and CKPN ratios significantly reduces bank profitability as measured by ROA and NIM. This result is consistent with Risk Management Theory, which holds that deteriorating asset quality compels banks to increase loan loss provisions, thereby directly compressing net income (Hull, 2018; Saunders & Allen, 2020). Empirically, this pattern was observed most sharply during 2019–2021, when Bank BTN's NPL ratio exceeded 3% as a consequence of the economic contraction caused by the COVID-19 pandemic, leading to elevated provisioning requirements and a corresponding decline in financial performance (Otoritas Jasa Keuangan, 2023). These findings are consistent with prior studies confirming that credit risk is one of the most influential determinants of bank profitability (Athanasoglou et al., 2008; Bolarinwa et al., 2021; Sufian & Habibullah, 2021).

Effect of Liquidity on Financial Performance

Liquidity was found to have no significant effect on the financial performance of Bank BTN, with a path coefficient of -0.061, a t-statistic of 0.842, and a p-value of 0.400. This result indicates that fluctuations in LDR and Cash Ratio during the study period did not directly translate into significant changes in bank profitability. Although Liquidity Management Theory suggests that banks must balance liquidity and profitability to avoid both idle funds and liquidity shortfalls (Freixas & Rochet, 2008), the specific characteristics of Bank BTN's business model may explain this non-significant relationship. The bank's LDR consistently ranged between 100% and 106%, remaining within the industry's tolerance band and supported by a stable mortgage-based funding structure and government-backed housing finance programs. Under these conditions, liquidity fluctuations did not generate sufficient variation in profitability to produce a statistically significant effect.

This finding is consistent with studies reporting that liquidity does not always significantly affect bank profitability, particularly when banks operate within stable funding structures (Nguyen & Nguyen, 2022; Petria et al., 2015).

Effect of Cost of Funds on Financial Performance

Cost of funds also showed no significant effect on financial performance, with a path coefficient of -0.114 , a t -statistic of 1.215 , and a p -value of 0.225 . Although the direction of the relationship is negative consistent with Cost of Capital Theory, which predicts that higher funding costs compress net interest margins (Khan et al., 2021) the effect did not reach statistical significance. This outcome may reflect the bank's ability to manage its funding structure through interest rate adjustments on the lending side, thereby partially offsetting the impact of rising deposit costs on overall profitability. Notably, Bank BTN's COF declined after 2021, coinciding with Bank Indonesia's low-interest-rate policy during the economic recovery phase, which helped stabilise margins despite ongoing cost pressures. This finding aligns with Yüksel and Zengin (2020), who similarly found that cost of funds does not always produce a statistically significant effect on profitability when banks can effectively pass on funding cost increases to borrowers.

Managerial and Practical Implications

Beyond statistical significance, these results point to concrete priorities for banking practitioners. Because credit risk is the only construct with a significant negative effect, Bank BTN's management should treat credit risk governance specifically strengthening borrower screening in mortgage and consumer segments, early-warning monitoring of NPL migration, and proactive CKPN provisioning ahead of macroeconomic downturns as the primary and most cost-effective lever for protecting ROA and NIM, rather than distributing risk-management effort evenly across all three determinants. Although liquidity did not show a statistically significant effect in this sample, the LDR range of $100\% - 106\%$ recorded in Table 2 sits close to regulatory tolerance limits, so liquidity optimisation efforts should still focus on maintaining a prudent buffer between loan disbursement and third-party funding growth to avoid the construct becoming a binding constraint if funding conditions tighten. On funding efficiency, the non-significant effect of cost of funds suggests that Bank BTN has been reasonably effective at repricing assets to absorb rising deposit costs; management can reinforce this

by continuing to diversify funding sources toward lower-cost, stable retail deposits and by monitoring the spread between COF and lending yields as a leading indicator, so that funding efficiency gains are sustained rather than assumed. For the Otoritas Jasa Keuangan and other regulators, these findings support directing supervisory attention primarily toward asset-quality indicators, while continuing to monitor liquidity and funding-cost ratios as secondary early-warning signals rather than as primary profitability drivers for housing-finance banks of Bank BTN's profile.

Simultaneous Effect of Credit Risk, Liquidity, and Cost of Funds on Financial Performance

When examined simultaneously, credit risk, liquidity, and cost of funds collectively exert an influence on the financial performance of Bank BTN, as evidenced by a Q^2 value of 0.113 greater than zero, confirming the model's predictive relevance (Henseler, 2021). The combined R^2 of 0.113 indicates that the three variables jointly explain 11.3% of the variation in profitability, with the remaining 88.7% attributable to factors outside the model. This finding supports Financial Intermediation Theory, which recognises that bank profitability is determined by the interplay of multiple intermediation-related variables rather than any single factor (Freixas & Rochet, 2008). The relatively low explanatory power of the model is not uncommon in banking research, where profitability outcomes are simultaneously shaped by operational efficiency, asset quality, digital banking strategies, macroeconomic cycles, and regulatory conditions factors that extend well beyond the three variables examined in this study (Sufian & Habibullah, 2021; Saunders et al., 2022).

4. Conclusion

Conclusion

This study examined the effect of credit risk, liquidity, and cost of funds on the financial performance of PT Bank Tabungan Negara (Persero) Tbk over the period 2015–2025 using a PLS-SEM approach. The findings demonstrate that credit risk, measured through NPL and CKPN, is the only variable that exerts a negative and significant effect on financial performance, confirming that deteriorating asset quality remains the most consequential threat to bank profitability in the Indonesian context particularly during the COVID-19 pandemic period when provisioning burdens intensified and compressed

both ROA and NIM (Athanasoglou et al., 2008; Saunders & Allen, 2020). Liquidity and cost of funds, while theoretically expected to influence profitability, did not produce statistically significant effects during the study period, suggesting that Bank BTN's stable mortgage-based funding structure and its ability to adjust lending rates partially insulated profitability from fluctuations in LDR, Cash Ratio, COF, and IER (Nguyen & Nguyen, 2022; Yüksel & Zengin, 2020). Simultaneously, the three variables collectively explain only 11.3% of the variation in financial performance, indicating that bank profitability is a multidimensional outcome shaped by a broader set of factors including macroeconomic conditions, operational efficiency, regulatory environment, and digital transformation that extend beyond the scope of this model (Sufian & Habibullah, 2021; Saunders et al., 2022). The practical implication of these findings is significant: bank management should prioritise credit risk governance as the primary lever for sustaining and improving profitability, while regulators particularly the Otoritas Jasa Keuangan may use these insights to strengthen supervisory frameworks focused on credit quality monitoring, especially during periods of macroeconomic stress. This study contributes to the existing literature by providing an integrated, longitudinal empirical examination of Bank BTN using PLS-SEM, a methodological approach that offers more nuanced structural insights than conventional regression-based studies (Hair et al., 2019; Henseler, 2021). These conclusions should nonetheless be read as indicative rather than definitive: with an R^2 of 0.113 and outer-model reliability figures for two constructs below conventional thresholds, the model captures only a modest and imprecisely bounded share of the variation in Bank BTN's financial performance, so the significant credit-risk effect should be understood as the clearest signal within a generally weak-explanatory-power model rather than as proof that credit risk alone governs profitability, and the non-significant liquidity and cost-of-funds effects should be treated as evidence of no detectable effect within this sample and period rather than as confirmation that these variables are irrelevant to bank profitability more broadly.

Suggestions

Future research is encouraged to expand the scope of investigation by including a broader sample of state-owned banks or all commercial banks listed on the Indonesia Stock Exchange, which would enhance the

generalizability of the findings beyond the specific characteristics of Bank BTN's housing-finance-oriented business model. Subsequent studies should also consider incorporating additional variables that are theoretically and empirically relevant to bank profitability, such as capital adequacy ratio (CAR), operational efficiency (BOPO), digital banking intensity, and macroeconomic indicators including inflation and GDP growth rate, as these factors may substantially account for the 88.7% unexplained variance identified in this study (Sufian & Habibullah, 2021; Saunders et al., 2022). Each of these variables is expected to improve the model for a distinct reason: CAR would capture the capital buffer available to absorb credit losses independently of the NPL/CKPN construct already tested; BOPO would isolate cost efficiency from funding cost, since a bank can face rising COF yet still protect margins through operational efficiency, a mechanism the current cost-of-funds construct cannot detect on its own; digital banking intensity would proxy for transaction-cost and fee-income channels that are increasingly material to ROA and NIM but are not represented by any indicator in the present model; and inflation and GDP growth would account for macroeconomic demand-side conditions that shift loan demand and asset yields independently of the bank-specific ratios examined here. Incorporating these constructs would therefore not simply add explanatory power but would help disentangle bank-specific management effects from external macroeconomic conditions, which the current single-bank, three-construct model cannot separate. From a methodological standpoint, future researchers may benefit from employing panel data regression or covariance-based SEM to provide complementary perspectives and more robust statistical inference, particularly when working with larger datasets across multiple banking institutions (Henseler, 2021). Addressing these limitations would not only strengthen the explanatory power of future models but also generate more comprehensive and actionable policy recommendations for both bank management and financial system regulators in Indonesia.

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