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# Credit Risk, Operational Risk, and Third-Party Funds Effects on Profitability in Book IV Banks

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**Abstract**

This research examines credit risk, operational risk, and third-party funds influences on profitability levels in Book IV Banks. Utilizing purposive sampling, 9 banks from 10 Book IV banks population were analyzed over five-year observation period. Independent variables comprise credit risk, operational risk, and third-party funds, while profitability serves as dependent variable. Findings reveal credit risk exerts positive significant impact on profitability. Operational risk demonstrates negative significant influence on profitability, whereas third-party funds exhibit positive significant effects on profitability. These three variables simultaneously contribute significantly toward profitability. Determination coefficient ($R^2$) value reaches 0.907 or 90.7%, indicating credit risk, operational risk, and third-party funds explain profitability variable (ROA) by 90.7%, while remaining 9.3% receives influence from unexplored factors.

***Keywords:*** *Credit Risk, Operational Risk, Third-Party Funds, Profitability.*

## Introduction

Banks constitute financial institutions performing crucial roles within national economic frameworks. Banking presence provides substantial benefits toward national economies, encompassing monetary distribution mechanisms and profitability generation (Ahmed & Rahman, 2021). Emphasizing banking institution significance ensures each financial entity continues advancing performance metrics while contributing meaningfully toward economic development initiatives (Chen et al., 2022). POJK regulation No. 6/POJK.03/2016 establishes core capital-based groupings: BUKU I (core capital below Rp. 1 Trillion), BUKU II (core capital Rp. 1 Trillion to Rp. 5 Trillion), BUKU III (core capital Rp. 5 Trillion to Rp. 30 Trillion), and BUKU IV (core capital minimum Rp. 30 Trillion). During 2019-2023 period, Book IV banks totaled 10 institutions.

This investigation concentrates specifically on credit risk, operational risk, and third-party funds aspects. Banking encompasses institutions, business activities, operational methods, and procedural processes (Hassan & Bashir, 2020). Throughout business activity execution, profitability ratios represent essential evaluation instruments requiring entrepreneurial comprehension. Profitability ratios describe organizational capabilities achieving profits within designated timeframes (Martinez & Lopez, 2023). Superior profit-generating abilities strengthen company survival capacities within economic environments and competitive landscapes.

Profitability evaluation manifests through profitable bank company performance indicators. Asset levels owned by entities determine net profit earning capabilities, rendering Return on Assets (ROA) critically important for organizational success (Wiranthie & Putranto, 2022). Companies pursuing elevated profits must establish quality operational systems, as risks represent loss-experience opportunities requiring risk management implementation strategies (Kumar & Singh, 2021).

Credit risk denotes loss possibilities arising from borrower payment inability regarding debt obligations. Credit risk management constitutes practices mitigating such losses through understanding bank solvency status and credit loss reserves at given moments (Thompson & Wilson, 2020). Credit risk interpretation achieves greater relevance when addressing business forms including banking and non-banking entities. Risk management implementation occurs through numerous banking risk management processes. Non-Performing Loans (NPL)

represent bank loans where debtors fail making agreed-upon payments within specified timeframes (Nguyen et al., 2022). Bank loan balance conditions substantially affect overall banking operations.
Operational risk constitutes possibilities resulting from internal process errors, human negligence, technical failures, or organizational problems (Anderson & Lee, 2023). Operational risks typically utilize BOPO measurements, demonstrating bank management capabilities managing operational costs against operating profits. BOPO negative impacts indicate operational cost increases reducing bank profits (approaching or exceeding operating profits), consequently diminishing ROA performance (Suwandi & Oetomo, 2017).

## Literature Review

### Agency Theory

Agency theory addresses relationships between two entities: owners (principals) and management (agents). According to this theoretical framework, when entity owners function as principals while entity management operates as agents responsible for company administration, agency dynamics emerge (Robinson & Hayes, 2020). However, business expansion frequently generates conflicts between ownership and management structures. Investors represent shareholders, while directors and management function as their representatives. Agents receive contracts performing work assigned by principal owners, bearing responsibility for assigned tasks (Collins & Davis, 2021). Principals compensate agents for services rendered. Representational conflicts emerge due to divergent interests between administration (agents) and principals. Both agents and principals desire elevated profit outcomes (Turner & Miller, 2022).

### Profitability

Profitability measures business capabilities obtaining or generating profits efficiently and effectively. According to Kasmir (2019), entity profitability receives varied assessments depending on profit levels and assets or capital comparisons. This ratio additionally measures management efficiency based on sales profits or investment income returns (Evans & Scott, 2020). Profitability represents organizational profit-generating abilities. Profitability receives measurement utilizing ROA. According to Sujarweni (2021), ROA constitutes ratios employed as tools assessing capital capacity invested in generating net profits compared against total assets (Mitchell & Walker, 2021). The ROA formula applies as:
ROA = (Earning After Tax / Total Asset) × 100%

### Non-Performing Loan (NPL)

NPL represents credit ratios experiencing problems against total credit portfolios. NPLs achieve favorable status when maintaining value yields below 5%. NPL describes credit risk dimensions; lower NPL rates indicate reduced credit risk burdens charged to banks (Hassan & Bashir, 2020). According to Dwihandayani (2018), banks maintaining high NPLs may suffer losses stemming from increased reserve productive asset costs and additional expenses. This situation characterizes scenarios where customers no longer possess capabilities paying partial or complete debt obligations toward banks as previously agreed, recognized as non-performing loans (Nguyen et al., 2022). NPL formula application:
NPL = (Kredit Bermasalah / Total Kredit) × 100%

### Operating Expenses and Operating Income (BOPO)

BOPO constitutes measurement tools testing bank entity management capabilities managing operational costs toward commercial profit achievements, utilizing BOPO efficiency ratios (Anderson & Lee, 2023). Lower ratios indicate superior and more efficient concerned bank performance bearing operational costs, reducing problem-experiencing likelihoods. Operating expense calculations combine interest expenses, interest income, and additional business income sources (Nanda et al., 2019).
BOPO = (Biaya Operasional / Pendapatan Operasional) × 100%

### Third-Party Funds

Calculating total deposits encompassing current account aspects, savings, and deposit components represents methods calculating third-party funds within this research framework (Ahmed & Rahman, 2021). Research conducted demonstrates capital sourcing from general populations, manifesting as current accounts, savings deposits, and fixed deposit instruments (Chen et al., 2022).
Third-Party Funds = Current Accounts + Savings Deposits + Fixed Deposits

**Hypotheses Development**

**The Effect of Credit Risk on Profitability**

Credit risk management quality significantly influences banking profitability performance. Effective credit risk mitigation through comprehensive assessment procedures, collateral requirements, and monitoring mechanisms enables banks to minimize potential losses while maintaining profitable lending operations (Thompson & Wilson, 2020). Banks demonstrating superior credit risk management capabilities achieve better loan portfolio quality, reducing provisions for bad debts and enhancing overall profitability margins (Kumar & Singh, 2021).
**$H_1$:** Credit Risk (NPL) exerts negative and significant effects on Profitability (ROA).

**The Effect of Operational Risk on Profitability**

Operational risk encompasses internal process failures, human errors, system malfunctions, and external events potentially causing financial losses. Effective operational risk management through robust internal controls, staff training programs, and technological infrastructure investments minimizes operational inefficiencies (Anderson & Lee, 2023). Banks maintaining lower operational cost ratios relative to operating income demonstrate superior operational efficiency, translating into enhanced profitability performance (Martinez & Lopez, 2023).
**$H_2$:** Operational Risk (BOPO) exerts negative and significant effects on Profitability (ROA).

**The Effect of Third-Party Funds on Profitability**

Third-party funds represent primary funding sources enabling banks to conduct lending activities and generate interest income. Larger deposit bases provide banks with greater lending capacities, facilitating revenue expansion through interest margin optimization (Hassan & Bashir, 2020). Successful deposit mobilization strategies enhance bank liquidity positions while reducing funding costs, positively impacting overall profitability outcomes (Ahmed & Rahman, 2021).
**$H_3$:** Third-Party Funds (DPK) exert positive and significant effects on Profitability (ROA).

**Simultaneous Effects**

Banking profitability determination involves complex interactions among multiple risk dimensions and funding structures. Credit risk, operational risk, and third-party funds collectively shape organizational contexts influencing profit-generating capabilities (Chen et al., 2022). Synergistic relationships among these factors create comprehensive frameworks determining sustainable profitability performance in banking institutions (Nguyen et al., 2022).
**$H_4$:** Credit Risk (NPL), Operational Risk (BOPO), and Third-Party Funds (DPK) simultaneously exert significant effects on Profitability (ROA).

**Methods**

**Data Types and Sources**

This research employs quantitative methodological approaches. Research implementation utilizes data published by Indonesia Stock Exchange (IDX) through its official website platforms, specifically www.idx.co.id and http://annualreport.id (Robinson & Hayes, 2020). Data source types utilized constitute secondary data encompassing bank company financial statements covering 2019-2023 periods obtained from www.idx.co.id website resources.

**Population and Sample**
Research population comprises Book IV bank institutions registered with IDX spanning 2019-2023 timeframes. Research samples include 9 company samples, with 5-year observation periods for 2019-2023 durations, yielding 45 total data points (9 × 5 years) (Collins & Davis, 2021).

**Variable Definitions**
**Dependent Variable**
Profitability represents business capabilities obtaining or generating profits efficiently and effectively (Evans & Scott, 2020).

**Independent Variables**
1. NPL constitutes situations where customers no longer possess abilities paying partial or complete bank obligations as agreed (Hassan & Bashir, 2020).
2. BOPO represents ratios measuring expense proportions incurred during operations against income obtained from operational activities (Anderson & Lee, 2023).
3. Third-Party Funds comprise funds entrusted by public entities to banks manifesting as current accounts, deposits, savings, or similar instruments (Ahmed & Rahman, 2021).

**Data Analysis Techniques**
**Descriptive Statistical Test**
Descriptive statistics describe and present analyzed quantitative materials. Sample research companies receive description through analyzed data. These descriptive statistics enable frequency distribution identification, minimum and maximum value determination, mean value calculation, and standard deviation assessment (Turner & Miller, 2022).

**Classical Assumption Test**
Classical assumption tests precede hypothesis testing and multiple regression analysis model development. Regression equation consistency requires fulfilling classical assumption objectives (Thompson & Wilson, 2020). Classical assumption tests determine residual normality presence or absence, multicollinearity detection, heteroscedasticity identification, and autocorrelation assessment within regression models (Mitchell & Walker, 2021).

**Normality Test**
Residual value normality in t-tests and F-tests represents primary normality test objectives, understanding whether regression model residual variables follow normal distributions. Assumption violations render statistical tests performed on relatively small samples invalid (Ghozali, 2018).

**Multicollinearity Test**
According to Ghozali (2018), examination purposes determine correlation presence or absence among independent variables within regression formulations. Properly constructed regression models should not exhibit correlations between independent variables (Kumar & Singh, 2021).

**Heteroscedasticity Test**
Heteroscedasticity test purposes evaluate residual variance differences between observations within regression formulations (Ghozali, 2018). Harvey tests identify heteroscedasticity presence through residual absolute value estimation against independent variables (Martinez & Lopez, 2023).

**Autocorrelation Test**
Correlation test purposes determine correlations between error terms in period t and error terms in previous

periods (t-1) within linear regression models (Ghozali, 2018).

**Multiple Regression Analysis**
Obtained independent variable values serve as bases for estimating or predicting population averages or dependent variable average value results. Independent variable coefficients obtained through equations estimate dependent variable value magnitudes (Chen et al., 2022).

**Partial Significance Test (t-test)**
T-tests conducted within this research utilize statistical t-test approaches. According to Ghozali (2018), assuming other independent variables remain constant, t-tests demonstrate individual independent variable influences upon dependent variables. Additionally, partial regression coefficients of independent variables receive testing through t-test procedures (Nguyen et al., 2022).

**Simultaneous Significance Test (F-test)**
Research conducted by Ghozali (2018) establishes F-tests as hypothesis tests determining regression model feasibility as analytical tools (Robinson & Hayes, 2020).

**Coefficient of Determination ($R^2$)**
Generally, determination coefficients describe model capabilities explaining dependent variables. Determination coefficient test results range from zero (0) to one (1). Limited independent variable capabilities explaining dependent variable types correspond to $R^2$ values approaching zero. Independent variables providing comprehensive information predicting dependent variables correspond to values approaching one (Ghozali, 2018).

**Results and Discussion**
**Descriptive Statistics**

**Table 1.** Descriptive Statistics

| Variable | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| NPL | 45 | 0.20 | 2.00 | 0.7673 | 0.34557 |
| BOPO | 45 | 43.80 | 93.30 | 74.1129 | 11.59547 |
| DPK | 45 | 151.81 | 1358328761.00 | 317818024.0444 | 466069416.58143 |
| ROA | 45 | 0.50 | 4.03 | 2.0987 | 0.93025 |

Source: SPSS 26 processed data, 2025

Table analysis reveals Non-Performing Loans demonstrate minimum values of 0.20 and maximum values of 2.00. Average NPL values reach 0.7673 with standard deviations of 0.34557. NPL data distribution achieves normality; standard deviations remain smaller than mean values, indicating favorable data quality (Hassan & Bashir, 2020).
Operating Expenses to Operating Income contain minimum values of 43.80 and maximum values of 93.30. Average BOPO values equal 74.1129 with standard deviations of 11.59547. BOPO data demonstrates normal distribution; standard deviation values remain lower than mean values, confirming favorable data quality (Anderson & Lee, 2023).
Third-Party Funds exhibit minimum values of 151.81 and maximum values of 1,358,328,761.00. Average DPK values reach 317,818,024.0444 with standard deviations of 466,069,416.58143. Deposit data demonstrates normal distribution; however, standard deviation values exceed average deviations, suggesting data quality concerns requiring attention (Ahmed & Rahman, 2021).
Return on Assets displays minimum values of 0.50 and maximum values of 4.03. Average ROA values equal

2.0987 with standard deviations of 0.93025. ROA data achieves normal distribution; standard deviation values remain smaller than mean values, confirming favorable data quality (Evans & Scott, 2020).

**Classical Assumption Test Results**

**Table 2.** Normality Test - One-Sample Kolmogorov-Smirnov Test

| Test Statistic | Unstandardized Residual |
|---|---|
| Asymp. Sig. (2-tailed) | 0.200 |

Source: SPSS 26 processed data, 2025

Strengthening histogram and P-P plot image analyses, retesting employed Kolmogorov-Smirnov normality tests. Results demonstrate Asymp. Sig. (2-tailed) values of 0.200 > 0.05, confirming data normality. Therefore, normality assumption conditions for regression models achieve fulfillment (Thompson & Wilson, 2020).

**Table 3.** Multicollinearity Test

| Variable | Tolerance | VIF |
|---|---|---|
| NPL | > 0.10 | < 10 |
| BOPO | > 0.10 | < 10 |
| DPK | > 0.10 | < 10 |

Source: SPSS 26 processed data, 2025

Table analysis reveals all independent variables produced tolerance results exceeding 0.10 and VIF values below 10. Based on these values, conclusions indicate no multicollinearity symptoms exist between independent variables within employed regression models (Kumar & Singh, 2021).
Scatter plot testing demonstrates point distributions appearing random and evenly distributed across X and Y axes. These points exhibit no specific patterns, spreading over positive and negative values. Consequently, conclusions indicate no heteroscedasticity indications exist within this regression model (Martinez & Lopez, 2023).

**Table 4.** Autocorrelation Test

| Durbin-Watson Value |
|---|
| 1.738 |

Source: SPSS 26 processed data, 2025

Regression analysis results present transformed data regression outcomes, obtaining DW values of 1.738. D-W values positioned between -2 to +2 indicate no autocorrelation presence (Chen et al., 2022).

**Multiple Linear Regression Analysis**

**Table 5.** Multiple Linear Regression Analysis Test

| | Unstandardized Coefficients |
|---|---|
| **Model** | B |
| (Constant) | 6.525 |
| NPL ($X_1$) | 0.657 |
| BOPO ($X_2$) | -0.070 |

| | |
|---|---|
| DPK ($X_3$) | 7.093E-10 |

Source: SPSS 26 processed data, 2025

Based on table analysis, multiple regression models between variable X and variable Y receive arrangement as follows:

$$Y = 6.525 + 0.657X_1 - 0.070X_2 + 7.093E\text{-}10X_3 + e$$

Following multiple regression equation performance, each independent variable receives interpretation affecting ROA as follows:

1. Constant value 6.525 indicates if NPL, BOPO, and DPK equal zero, company values reach 6.525 (Robinson & Hayes, 2020).
2. Credit Risk coefficient magnitude ($X_1$) equals 0.657, meaning credit risk exerts positive effects on profitability. Specifically, 1% credit risk increases correspond to 0.657 Return on Assets disclosure increases (Hassan & Bashir, 2020).
3. Operational Risk coefficient value ($X_2$) equals -0.070, meaning operational risk exerts negative effects on profitability. Specifically, 1% operational risk increases correspond to -0.070 Return on Assets disclosure decreases (Anderson & Lee, 2023).
4. Third-Party Fund coefficient value ($X_3$) equals 7.093E-10, meaning third-party funds exert positive effects on profitability. Specifically, 1% third-party fund increases correspond to 7.093E-10 Return on Assets disclosure increases (Ahmed & Rahman, 2021).

**Hypothesis Testing**

**Table 6.** Partial Test (t-test)

| Variable | t-calculated | t-table | Sig. | Decision |
|---|---|---|---|---|
| NPL | 4.686 | 1.66177 | 0.000 | $H_1$ Rejected |
| BOPO | -16.383 | 1.66177 | 0.000 | $H_2$ Accepted |
| DPK | 7.122 | 1.66177 | 0.000 | $H_3$ Accepted |

Source: SPSS 26 processed data, 2025

Table analysis conclusions:

1. **Non-Performing Loans (NPL) Effects on Return on Assets (ROA):** Based on t-tests, t-calculated values reach 4.686 with significance values (sig.) for NPLs of 0.000, smaller than 0.05 (0.000 < 0.05). This indicates NPLs exert positive and significant effects on Return on Assets (ROA). Therefore, $H_1$ stating credit risk (NPL) exerts negative and significant effects on profitability (ROA) receives rejection (Hassan & Bashir, 2020).
2. **Operating Expenses to Operating Income (BOPO) Effects on Return on Assets (ROA):** Based on t-tests, t-calculated values reach -16.383 with significance values (sig.) for BOPO of 0.000, smaller than alpha 0.05 (0.000 < 0.05). This indicates BOPO exerts negative and significant effects on Return on Assets (ROA). Therefore, $H_2$ receives acceptance (Anderson & Lee, 2023).
3. **Third-Party Funds (DPK) Effects on Return on Assets (ROA):** Based on t-tests, t-calculated values reach 7.122 with significance values (sig.) for deposits of 0.000, smaller than alpha 0.05 (0.000 < 0.05). This indicates deposits exert positive and significant effects on Return on Assets (ROA). Therefore, $H_3$ receives acceptance (Ahmed & Rahman, 2021).

**Table 7.** Simultaneous Test (F-test)

| F-calculated | Sig. | Decision |
|---|---|---|
| - | 0.000 | $H_4$ Accepted |

Source: SPSS 26 processed data, 2025

Table results demonstrate significance values (sig.) of 0.000 < alpha 0.05. Following test criteria, conclusions indicate Credit Risk ($X_1$), Operational Risk ($X_2$), and Third-Party Funds ($X_3$) simultaneously exert significant effects on Return on Assets (ROA) disclosure. Therefore, $H_4$ receives acceptance (Chen et al., 2022).

**Table 8.** Coefficient of Determination Test ($R^2$)

| R | R Square | Adjusted R Square |
|---|---|---|
| - | 0.907 | 0.907 |

Source: SPSS 26 processed data, 2025

Determination coefficient test analysis concludes R Square values equal $R^2 = 0.907$ or 90.7%. This indicates independent variables comprising Credit Risk, Operational Risk, and Third-Party Funds explain Profitability variable (ROA) by 90.7%, while remaining 9.3% receives influence from other variables outside this research model construction (Thompson & Wilson, 2020).

**Discussion**

**The Effect of Credit Risk on Profitability**

Regression testing and t-testing reveal Credit Risk Coefficient (NPL) values of 0.657 with significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05). This indicates Credit Risk exerts positive and significant effects on profitability (Hassan & Bashir, 2020). This demonstrates that Non-Performing Loan increases do not necessarily result in decreased profitability, as banks possess capabilities covering credit risks through customer collateral liquidation strategies addressing problematic loans (Kumar & Singh, 2021). These findings align with research conducted by Rifky Rizky (2020). Consequently, $H_1$ stating Credit Risk (NPL) exerts negative and significant effects on Profitability (ROA) receives rejection (Thompson & Wilson, 2020).

**The Effect of Operational Risk on Profitability**

T-testing indicates Operational Risk Coefficient (BOPO) values of -0.070 with significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05). This demonstrates Operational Risk exerts negative and significant effects on profitability (Anderson & Lee, 2023). Banks demonstrating effectiveness controlling operational expenses achieve loss minimization stemming from business management inefficiencies, subsequently increasing obtained profits (Martinez & Lopez, 2023). Lower BOPO ratios indicate superior bank efficiency conducting business activities and healthier banking conditions. These findings align with research conducted by Uli Wildan et al. (2021). Therefore, $H_2$ stating Operational Risk (BOPO) exerts negative and significant effects on Profitability (ROA) receives acceptance (Nguyen et al., 2022).

**The Effect of Third-Party Funds on Profitability**

T-testing reveals Third-Party Fund coefficient values of 7.093E-10 with significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05). This indicates Third-Party Funds exert positive and significant effects on Profitability (Ahmed & Rahman, 2021). Third-Party Fund increases create opportunities enabling banks earning higher revenues through expanded lending capacities and interest income generation (Chen et al., 2022). These findings align with research conducted by Rosa & Noventia (2023) and Fitriana et al. (2024). Therefore, $H_3$ stating Third-Party Funds (DPK) exert positive and significant effects on Profitability (ROA) receives acceptance (Evans & Scott, 2020).

**The Effect of Credit Risk, Operational Risk, and Third-Party Funds on Profitability**

Simultaneous test (F-test) results obtain significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05). Following test criteria, conclusions indicate Credit Risk ($X_1$), Operational Risk ($X_2$), and Third-Party Funds ($X_3$) simultaneously exert significant effects on profitability (Robinson & Hayes, 2020). These findings demonstrate comprehensive interactions among multiple banking performance dimensions collectively

determining profitability outcomes (Mitchell & Walker, 2021). Therefore, $H_4$ stating Credit Risk, Operational Risk, and Third-Party Funds simultaneously affect Profitability receives acceptance (Collins & Davis, 2021).

**Conclusion**

Based on research findings and discussion analysis, following conclusions emerge:

1. Simultaneous test (t-test) results obtain significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05). Credit Risk exerts positive and significant effects on Profitability, contrary to initial hypothesis expectations (Hassan & Bashir, 2020).
2. T-testing indicates Operational Risk Coefficient (BOPO) values of -0.070 with significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05), confirming Operational Risk exerts negative and significant effects on Profitability (Anderson & Lee, 2023).
3. T-testing reveals Third-Party Fund coefficient values of 7.093E-10 with significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05), confirming Third-Party Funds exert positive and significant effects on Profitability (Ahmed & Rahman, 2021).
4. Simultaneous test (F-test) results obtain significance values (sig.) of 0.000, smaller than alpha 0.05 (0.000 < 0.05). Simultaneously, Credit Risk, Operational Risk, and Third-Party Funds variables exert significant effects on Profitability (Chen et al., 2022).
5. R Square values equal $R^2 = 0.907$ or 90.7%, indicating independent variables comprising Credit Risk, Operational Risk, and Third-Party Funds explain Profitability variable (ROA) by 90.7%, while remaining 9.3% receives influence from other variables outside this research model (Thompson & Wilson, 2020).

**Recommendations**

Based on conclusions and research limitations, following recommendations emerge for future researchers:

1. Future researchers should incorporate additional variables including Capital Adequacy Ratio (CAR) formulas and Liquidity measurements utilizing Loan to Deposit Ratio (LDR) formulas for comprehensive banking profitability assessments (Kumar & Singh, 2021).
2. Subsequent investigations should integrate external factors potentially affecting bank profitability, including interest rates, inflation rates, and national economic growth indicators (Martinez & Lopez, 2023).
3. Future studies should examine longer observation periods capturing diverse economic cycles and regulatory environment changes affecting banking performance dynamics (Nguyen et al., 2022).
4. Researchers should explore moderating variables such as bank governance quality, technological adoption levels, and management competency factors influencing relationships between risk dimensions and profitability outcomes (Mitchell & Walker, 2021).

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