Volume 7 Issue 1 (2024) Pages 543 - 554
SEIKO : Journal of Management & Business
ISSN : 2598-831X (Print) and ISSN : 2598-8301 (Online)

The Influence of Bank Performance on Bank-Spesific, Industry-Spesific, Macroeconomic Factors and Income Diversification in Banking Sectors

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Abstract

This study aims to analyze the impact of bank-specific factors, industry-specific factors, macroeconomic factors, and income diversification on the performance of 36 commercial banks listed on the Indonesia Stock Exchange. A quantitative method is applied, using secondary data from financial statements of commercial banks for the period 2018-2022. The dependent variables measured are Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). Panel regression analysis is used to examine the influence of these factors on bank performance. The findings indicate that asset quality and inflation have a significant impact on ROA and ROE, while the loan ratio significantly affects ROE. Meanwhile, factors such as asset share, deposit share, and loan share do not show a significant influence. For the NIM variable, inflation and average exchange rates have a significant impact. This study is limited by the use of secondary data, which reflects only the conditions of companies listed on the Indonesia Stock Exchange, so the results cannot be generalized to all banks. Practically, this study can assist bank management in understanding the factors influencing financial performance and in making informed decisions based on relevant macroeconomic conditions. This study offers a novel contribution in identifying the relationship between bank-specific and macroeconomic factors with banking performance in Indonesia.

Keyword: *bank performance, bank-spesific, industry-spesific, macroeconomic, income diversification.*

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INTRODUCTION

In developing countries, progress in the financial sector is essential to achieving sustainable growth. However, before the financial sector can thrive, the banking sector requires appropriate regulation and oversight (Syed, A. A., Kamal, M. A., Grima, S., & Ullah, A., 2022). Strong bank performance not only provides adequate returns for shareholders on their investments but also serves as a catalyst for efficient resource allocation. A healthy investment cycle, marked by sufficient returns, is a key driver of

economic expansion. Conversely, weak banking performance can hinder economic growth and may even trigger financial crises (Bushashe, 2023).

Data from the Indonesian Banking Statistics report, from August 2022 (4.51%) to August 2023 (4.87%), accessible through the official website of the Financial Services Authority (OJK), shows that the Net Interest Margin (NIM) for general banks has been steadily increasing on a month-to-month basis. Various factors contribute to a bank's NIM, from internal management elements to external influences, such as industry climate (market concentration) and macroeconomic factors like inflation and economic growth. An increase in the banking sector's NIM may also reflect less efficient and less competitive market conditions.

At the macro level, a healthy banking industry can better withstand negative influences and support the stability of the financial system. Profitability is the lowest-cost source of capital and is a crucial prerequisite for competitive banking organizations at the micro level. Therefore, as a fundamental requirement for business operations, the primary goal of banking management is profit maximization. The banking industry plays a central role in the financial system, providing essential financial resources for the production of goods and services. Thus, the banking sector significantly contributes to enhancing the quality of life and overall societal well-being (Abdu, E., 2022).

The factors influencing a company's financial performance are volatile and specific, depending on operational characteristics and business environments. As a result, measuring bank profitability has become a central focus in corporate financial management (Bushashe, 2023). Factors affecting bank performance have yielded inconsistent and often contradictory findings, frequently overlooking industry-specific variables (Yaser Almansour, A., Mohammad Alzoubi, H., 2021). Industry-specific variables are critical factors that significantly impact bank performance. According to Githaiga (2023), income diversification has no impact on bank performance. While banks may have diverse revenue sources, this does not always enhance their financial performance unless supported by effective capital management.

Moreover, previous research on the impact of income diversification on bank performance has produced mixed results. Some studies indicate that income diversification positively affects bank performance (Nguyen, D. T., Le, T. D., & Tran, S. H., 2023). Previous studies have often overlooked the mediating role of industry-specific variables in the relationship between bank-specific factors and bank performance. Consequently, this study seeks to address unanswered questions from previous research. Additionally, by employing new methods, this study is expected to contribute meaningfully both theoretically and methodologically.

Bank Performance

Profitability measures are closely tied to the performance of a bank. Many researchers have sought to identify the financial metrics that influence bank performance. This study utilizes Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) to assess bank performance. Return on Assets (ROA) is a conventional measure of corporate profitability, with a higher ROA indicating that bank assets are efficiently generating profit, while a lower ROA suggests excessive asset use. ROA is calculated by dividing net income or loss for the year by total assets (Nguyen, 2023). It evaluates management's ability to secure deposits at reasonable

costs and invest them in profitable ventures (Hosna et al., 2019; John & Okika, 2019). However, banks are expected to encounter some problematic loans and losses from lending activities, so minimizing these losses to enhance profitability is a primary goal (Fadun, 2023).

A bank's Return on Equity (ROE) serves as a key indicator of its ability to generate profit for its shareholders and is a fundamental measure of financial performance and profitability (Akbar, 2021). ROE has become an important factor for investors evaluating a company's stock price, as it directly affects the company's intrinsic value (Abdullah, 2023). ROE demonstrates how effectively a company uses shareholders' funds to maximize net income. A higher ROA and ROE indicate efficient asset and equity management, while low values suggest inefficiency (Fadun, 2023). ROE reflects returns on shareholder-invested capital and incorporates revenue and earnings, with higher ratios indicating greater income generation and profitability (Ullah, 2023).

Net Interest Margin (NIM) measures the difference between interest income generated by a bank from loans and securities and the interest expenses on borrowed funds, relative to income-generating assets over a specific period. Higher net interest margins indicate greater profitability and stability for the bank (Bushash, 2023).

Statistical Influence of Bank-Specific Factors on Bank Performance

Commercial banks primarily generate revenue through lending, and the health of their loan portfolios has a direct impact on bank performance. Non-performing loans are a significant threat to financial institutions (Patwary & Tasneem, 2019). Credit default likelihood can be reduced by a developing economy that provides sufficient resources for production income and development (Syed, 2020; Syed & Aidyngul, 2020). Bank asset quality is assessed by total lending, with lower asset quality ratios indicating better bank performance (Mahfooz, 2023). Empirical evidence on the relationship between asset quality and bank earnings is inconclusive, though some studies indicate a negative impact of asset quality on performance (Bushashe, 2023). Profitability in commercial banks may be significantly influenced by asset quality. Capital adequacy refers to the level of capital a bank holds to cover risks such as credit, market, and operational risks, and to absorb potential losses (Mansour et al., 2023). Capital adequacy is a marker of a bank's internal financial strength and has a positive impact when facing crises. When capital adequacy and profitability are positively related, well-capitalized banks may take on riskier loans for increased returns. Conversely, banks with lower capitalization are more cautious with lending, negatively affecting profitability (Bushashe, 2023). Thus, banks with sufficient capital adequacy tend to achieve higher profitability than those with lower adequacy.

H1: Bank-specific factors have a statistically significant impact on bank performance.

Influence of Bank-Specific Factors on Industry-Specific Factors

Potential bank revenue is also influenced by the banking industry's structure. Studies have found that concentration ratios and market share—two measures of industry structure—positively correlate with profitability. The Structure-Conduct-Performance (SCP) hypothesis suggests that in highly concentrated banking industries, banks can act as monopolies, setting prices and costs disadvantageous to customers, thus achieving higher profitability than banks in more competitive

markets. In contrast, the Efficient-Structure hypothesis (ES) emphasizes that market share growth and expansion are key factors in bank success (Asngari et al., 2028). There is a positive relationship between bank asset market share and profitability, while a large market share of deposit products may reduce profitability due to higher funding costs. Hence, bank efficiency is crucial in determining market share's impact on performance. Efficient banks benefit from increased market share, while less efficient banks see reduced profitability. Based on these findings, this study proposes additional hypotheses to test the influence of bank-specific characteristics on profitability (Bushashe, 2023).

H2: Bank-specific factors have a statistically significant impact on industry-specific factors.

Statistical Mediation Role of Industry-Specific Factors Between Bank-Specific Factors and Bank Performance

Banks with significant market share generally have greater market power, allowing them to leverage market conditions more effectively. In concentrated markets, collaboration opportunities between banks are higher, although this advantage can diminish with competition from new entrants. Market concentration reduces collaboration costs, benefiting established banks (Bushashe, 2023). Raj and Dalvadi (2020) analyzed the factors affecting public sector bank stock prices in India, finding significant positive influences from liquidity, firm size, and debt level, while profitability, risk, and dividend policy showed no significant effect. In Nepal, Pandey and Sunar (2022) found significant positive relationships between various bank-specific variables, such as dividend per share, dividend payout ratio, earnings per share, and return on equity, and stock prices. Based on these theoretical and empirical arguments, the following hypothesis is proposed:

H3: Industry-specific factors have a statistically significant influence on the relationship between bank-specific factors and bank performance.

Influence of Macroeconomic Factors on Bank Performance

Bank profitability is affected by both internal characteristics, such as operational efficiency, risk profile, capital levels, and operational scale, and external factors, like macroeconomic conditions. This study stands out by analyzing a longer period, enabling identification of stable, long-term relationships, while selecting variables aligned with country-specific characteristics for more relevant findings (Bushashe, 2023). The study contributes to literature by emphasizing macroeconomic factors' roles in determining bank profitability (O'Connell, 2023). Ünvan and Yakubu (2020) found that profitability, bank size, and liquidity significantly enhance bank performance, while inflation has a negative impact. High inflation, unexpectedly, hampers savings and investment, negatively affecting bank profits (Bushashe, 2023). Based on theoretical and empirical arguments, the following hypothesis is proposed:

H4: Macroeconomic factors have a statistically significant impact on bank performance.

Influence of Macroeconomic Factors on Bank-Specific Factors

According to Farhana Asrin (2023), bank deposits serve as a primary source of operating funds and significantly influence working capital. If a bank holds assets or liabilities in foreign currency, it is exposed to exchange rate risk. Exchange rate fluctuations can substantially impact bank profitability and equity (Bushashe, 2023). Based on theoretical and empirical arguments, the following hypothesis is proposed:

H5: Macroeconomic factors have a statistically significant impact on bank-specific factors.

Influence of Macroeconomic Factors on Industry-Specific Factors

Research by Chattopadhyay and Bose (2023) highlights the crucial role of the financial system, particularly banking, in allocating resources efficiently from savers to borrowers for productive investment, driving economic growth. Macro policy interventions, such as monetary and fiscal policies, implemented by the government and central banks, have significant impacts on the banking sector. Interest rates influence bank profit margins and public interest in borrowing or saving. Exchange rate effects on profitability suggest that banks with significant foreign-currency assets or liabilities may experience large profit margins. Inflation and exchange rates can either positively or negatively impact bank-specific activities (Bushashe, 2023). Based on theoretical and empirical arguments, the following hypothesis is proposed:

H6: Macroeconomic factors have a statistically significant impact on industry-specific factors.

Impact of Income Diversification on Bank Performance

Income diversification enables banks to expand economic scope and cross-sell activities, helping them address challenges arising from market competition (Japan Huynh, 2023). While income diversification can reduce risk and stabilize revenue streams, Githaiga (2023) found it does not directly impact bank performance. Some studies show non-interest operations enhance bank income, minimize risk, and improve performance (Nguyen, 2023). Based on theoretical and empirical arguments, the following hypothesis is proposed:

H7: Income diversification has a significant impact on bank performance.

Influence of Liquid Assets and Loan Ratio on Bank Performance

Liquid assets, a measure of a bank's liquidity risk management, include cash or government securities to meet obligations (Nguyen, 2023). To mitigate liquidity risk, banks maintain a minimum amount of liquid assets. Liquidity risk arises when banks cannot meet customer demands, making higher liquidity ratios preferable despite lower investment returns (Yesmine, 2023). Other studies suggest that increasing liquid assets reduces default probability, boosting profitability (Nguyen, 2023). Loan ratios measure the proportion of total loans to total bank assets, with higher volumes correlating positively with profitability (Bushashe, 2023). Based on theoretical and empirical arguments, the following hypothesis is proposed:

H8: Liquid assets and loan ratios significantly impact bank performance.

METHODOLOGY

The method used to collect samples in this study is secondary data collection. The data collection techniques employed are documentation and literature review. This study uses data from public banking companies listed on the Indonesia Stock Exchange (IDX). The data sources for this research were obtained from annual reports and financial statements available on the Indonesia Stock Exchange (IDX) website at http://www.idx.co.id and on the websites of each company included in the study, covering the period from 2018 to 2022. The sampling method applied in this study is purposive sampling. Purposive sampling is a sampling method that is adjusted to meet certain specified criteria (Hardani et al., 2020, p.368). The population comprises 36 commercial banks. Data analysis is performed using E-Views 9. The formula and operational used in this research as follows :

Table 1. Operational variables and formula

Variable	Indicator	Symbol	Definition	Source
Bank Performance	Retur on Asset	ROA	Net income before tax/ Total Assets	Bushashe (2023)
	Retur non Equity	ROE	Net income before tax /Total Equity	Bushashe (2023)
	Net Interest Margin	NIM	(Interest income - interest expense) /Average Earning Assets	Bushashe (2023)
Bank-Spesific Factors	Aset Quality	AQ	Loan loss provision/Total loans	Bushashe (2023)
	Capital Adequacy	CA	Total Capital/Total Asset	Bushashe (2023)
Industry-Spesific Factors	Asset Share	Asset Share	Total asset of the bank/ Total asset of all banks	Bushashe (2023)
	Deposit Share	Deposit Share	Total deposit of each bank/ Total deposit of all banks	Bushashe (2023)
	Loan Share	Loan Share	Total loan of specific bank /Total Loan of all banks	Bushashe (2023)
Macroeconomic Factors	Average Exchange Rate	Ave.ex.rate	Yearly Average exchange rate	Bushashe (2023)
	Inflation Rate	Inflation	Inflation Rate (%)	Bushashe (2023)
Income Diversification	Income Diversification	ID	1 - (Net interest income – other operating income)/Total operating income	Nguyen *et al.*(2023)
Asset Liquid	Liquid Asset and Total Asset	LATA	Rasio Aset Likuid/Total Aset	Nguyen *et al.*(2023)
Loan Ratio	Loan Ratio	LR	Total Utang / Total Aset	Nguyen *et al.*(2023)

RESULT AND DISCUSSION

Panel Regression Method

The panel data regression method consists of three models: common effect, fixed effect, and random effect. To determine the most appropriate and suitable model, two testing stages are necessary: the Chow Test and the Hausman Test. The following are the testing phases used to identify the most suitable panel data regression model: the Chow Test is utilized to choose between the Common Effect model or the Fixed

Effect model. If the Chi-square probability is less than 0.05, the model employed is the Fixed Effect model. The Hausman Test is used to ascertain whether the Random Effect model or the Fixed Effect model is more appropriate. If the random probability is greater than 0.05, the model used is the Random Effect model. The testing results indicate that for the variables ROA, ROE, and NIM, the random probability is greater than 0.05, thus the model employed is Random Effect model.

Table 2. Panel Regression Method

Y = ROA

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.506346	(35,134)	0.0000
Cross-section Chi-square	210.589614	35	**0.0000**

Y = ROE

Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.037736	(35,134)	0.0000
Cross-section Chi-square	170.394100	35	**0.0000**

Y = NIM

Effects Test	Statistic	d.f.	Prob.
Cross-section F	9.899419	(35,134)	0.0000
Cross-section Chi-square	229.850118	35	**0.0000**

F-Test.

The F test is conducted to test the effect of independent and control variables on the dependent variable simultaneously. If the probability of the F-statistic <0.05, then the independent and control variables have an effect on the dependent variable, and the regression model is feasible to use. The results of the F test show the probability of the F-statistic <0.05, so the regression model is feasible to use.

Goodness of Fit (R2)

The Goodness of Fit test is conducted to determine the extent to which the independent and control variables can explain the dependent variable. If the Adjusted R^2 value approaches 1, it indicates a very strong relationship among the variables.

For ROA, the Adjusted R^2 value is 0.146913.
For ROE, the Adjusted R^2 value is 0.163380.
For NIM, the Adjusted R^2 value is 0.073127.

These values indicate a weak to moderate relationship between the independent and control variables and the dependent variable.

Table 3. F-Test and Goodness of Fit (R2)

Y = ROA

R-squared	0.194571
Adjusted R-squared	0.146913
S.E. of regression	0.008883
F-statistic	4.082611
Prob(F-statistic)	0.000048

Y = ROE

R-squared	0.210119
Adjusted R-squared	0.163380
S.E. of regression	0.060922
F-statistic	4.495621
Prob(F-statistic)	0.000012

Y = NIM

R-squared	0.124908
Adjusted R-squared	0.073127
S.E. of regression	0.053353
F-statistic	2.412252
Prob(F-statistic)	0.010478

T – Test

The T-test is conducted to examine the regression coefficients by assessing the significance of the effects of each independent and control variable on the dependent variable, assuming that other variables remain constant. In this testing, it is assumed that other variables are held constant. The criteria for decision-making are as follows: If the t-significance is less than 0.05, the null hypothesis (H0) is rejected; if the t-significance is greater than 0.05, the null hypothesis (H0) is accepted.

Table 4. T-Test

Y = ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AQ	-0.001302	0.000600	-2.171452	0.0313
CA	0.015583	0.004597	3.389720	0.0009
ASSET_SHARE	1.559259	1.727369	0.902678	0.3680
DEPOSIT_SHARE	-1.628614	1.489769	-1.093199	0.2759
LOAN_SHARE	0.567990	0.795139	0.714329	0.4760
AVE_EX_RATE	-7.80E-07	1.59E-06	-0.492049	0.6233
INFLATION	0.265450	0.103725	2.559163	0.0114
ID	1.61E-05	2.02E-05	0.796499	0.4269
LATA	20951.27	19002.97	1.102526	0.2718

LR	0.030126	0.017678	1.704176	0.0902
C	-0.013089	0.028476	-0.459657	0.6464

Y = ROE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AQ	-0.009586	0.004067	-2.357001	0.0196
CA	0.054761	0.029342	1.866304	0.0637
ASSET_SHARE	11.68056	11.29108	1.034494	0.3024
DEPOSIT_SHARE	-12.25528	9.536565	-1.285084	0.2005
LOAN_SHARE	3.657052	5.295317	0.690620	0.4908
AVE_EX_RATE	3.02E-06	1.08E-05	0.280318	0.7796
INFLATION	1.227876	0.709001	1.731839	0.0851
ID	0.000263	0.000137	1.924958	0.0559
LATA	113183.1	122780.6	0.921832	0.3579
LR	0.442354	0.111857	3.954633	0.0001
C	-0.374826	0.187349	-2.000681	0.0470

Y = NIM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AQ	-0.004061	0.003839	-1.057821	0.2916
CA	-0.033897	0.031308	-1.082713	0.2805
ASSET_SHARE	2.795463	11.50162	0.243049	0.8083
DEPOSIT_SHARE	0.399808	10.10792	0.039554	0.9685
LOAN_SHARE	-0.548965	5.250840	-0.104548	0.9169
AVE_EX_RATE	-2.94E-05	1.01E-05	-2.900117	0.0042
INFLATION	2.423508	0.658984	3.677643	0.0003
ID	4.56E-05	0.000129	0.353747	0.7240
LATA	-76652.77	127494.8	-0.601223	0.5485
LR	-0.205140	0.121682	-1.685872	0.0937
C	0.694263	0.188844	3.676378	0.0003

Regression Model

The regression model used in this research consists of three models, which are part of the measurement of the effects of the independent variables (bank-specific factors, industry-specific factors, macroeconomic factors, and income diversification) and the control variables (Liquid Assets and Loan Ratio) on the dependent variables (ROA, ROE, and NIM). So the models used are as follows:

$$ROA = a + \beta_1(AQ)_{i,t} + \beta_2(CA)_{i,t} + \beta_3(ASSET\_SHARE)_{i,t} + \beta_4(DEPOSIT\_SHARE)_{i,t} + \beta_5(LOAN\_SHARE)_{i,t} + \beta_6(AVE\_EX\_RATE)_{i,t} + \beta_7(INFLATION)_{i,t} + \beta_8(ID)_{i,t} + \beta_9(LATA)_{i,t} + \beta_{10}(LR)_{i,t} + \mu_{i,t}$$

$$ROE = a + \beta_1(AQ)_{i,t} + \beta_2(CA)_{i,t} + \beta_3(ASSET\_SHARE)_{i,t} + \beta_4(DEPOSIT\_SHARE)_{i,t} + \beta_5(LOAN\_SHARE)_{i,t} + \beta_6(AVE\_EX\_RATE)_{i,t} + \beta_7(INFLATION)_{i,t} + \beta_8(ID)_{i,t} + \beta_9(LATA)_{i,t} + \beta_{10}(LR)_{i,t} + \mu_{i,t}$$

$$NIM = a + \beta_1(AQ)_{i,t} + \beta_2(CA)_{i,t} + \beta_3(ASSET\_SHARE)_{i,t} + \beta_4(DEPOSIT\_SHARE)_{i,t} + \beta_5(LOAN\_SHARE)_{i,t} + \beta_6(AVE\_EX\_RATE)_{i,t} + \beta_7(INFLATION)_{i,t} + \beta_8(ID)_{i,t} + \beta_9(LATA)_{i,t} + \beta_{10}(LR)_{i,t} + \mu_{i,t}$$

DISCUSSION

The findings of this study provide in-depth insights into the importance of both bank-specific and macroeconomic factors in influencing bank performance. The analysis shows that Asset Quality and Capital Adequacy significantly impact ROA and ROE, supporting previous literature which asserts that asset quality management and capital adequacy are fundamental elements in maintaining financial stability and the bank's ability to generate profits (Bushashe, 2023). With high asset quality and adequate capital, banks are more resilient in facing operational and financial risks.

Furthermore, the significant impact of Inflation on bank performance, particularly in terms of ROA, ROE, and NIM, indicates that macroeconomic conditions such as inflation rates require attention from bank management. Rising inflation can erode customers' purchasing power and affect a bank's ability to maintain its profit margins. This finding aligns with research by Nguyen et al. (2023), which also highlights that inflation impacts the profitability of the banking sector. In addition, the positive effect of the Loan Ratio on ROE suggests that the greater the ratio of loans to assets held by a bank, the greater its ability to generate profits for shareholders. This implies that effective credit management, while carrying inherent risks, can positively contribute to the bank's rate of return.

Overall, these findings have practical implications for bank management. By understanding and managing bank-specific factors such as asset quality and capital adequacy, as well as paying attention to macroeconomic indicators like inflation, banks can adopt more adaptive and strategic steps in response to economic changes. Consequently, banks in Indonesia will be better equipped to meet financial challenges and achieve sustainable stability and growth.

CONCLUSION

This study demonstrates that both bank-specific factors and macroeconomic factors significantly influence bank performance, as measured by Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). Hypothesis testing revealed that the variables of Asset Quality and Capital Adequacy have a significant impact on bank performance, particularly in relation to ROA and ROE. These findings suggest that maintaining high asset quality and ensuring adequate capital levels are crucial factors in sustaining the stability and profitability of banks.

Furthermore, inflation was found to have a significant impact on bank performance across all performance metrics—ROA, ROE, and NIM. The influence of inflation underscores the critical role that macroeconomic factors play in determining the financial health of banks. This indicates that banks must account for broader economic conditions when formulating risk management strategies and making financial decisions. The Loan Ratio variable also demonstrated a significant impact on

ROE, suggesting that a higher loan-to-asset ratio is associated with higher equity returns for banks.

Overall, this study emphasizes the importance of managing internal factors such as asset quality and capital, as well as being mindful of macroeconomic dynamics that can directly affect bank performance. Banks that are able to adjust their strategies in response to these conditions are more likely to achieve sustainable stability and profitability.

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