
The Influence of Financial Technology (Fintech) Development on The Financial Performance of Conventional Banks

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Abstract:

This study examines the influence of financial technology (fintech) development on the financial performance of conventional banks in Indonesia. Employing a quantitative approach, secondary data were collected from financial reports, official websites, and documentation of banks listed on the Indonesia Stock Exchange (IDX) during 2020–2022. The sample included banks with publicly available financial data on Internet Banking, Mobile Banking, and SMS Banking. Descriptive statistics summarize the financial performance and digital banking services, while classical assumption tests ensure the suitability of multiple linear regression for hypothesis testing. The study analyzes the effects of Internet Banking, Mobile Banking, SMS Banking, Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (BOPO), and firm size on financial performance, measured by Return on Assets (ROA) and Return on Equity (ROE). The results indicate that Internet Banking, Mobile Banking, and SMS Banking do not significantly affect ROA or ROE, with significance values ranging from 0.463 to 0.898. This limited impact is attributed to high technology costs, suboptimal utilization, evolving customer preferences, and the restricted functionality of SMS Banking. The findings suggest that banks need to optimize digital banking services and consider additional fintech innovations to enhance financial performance.

Keywords: *BOPO, CAR, Financial performance, Fintech, Internet Banking*

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1. Introduction

Digital technology has transformed economic activities, including trade, agriculture, and especially finance. In the globalization era, financial services have shifted significantly with the rise of financial technology (fintech), which integrates finance and digital innovation (Lestari et al., 2021). Fintech has reshaped the financial industry and affected the role of conventional banks by enabling remote, cashless transactions. Banks that fail to adopt technological advances risk losing competitiveness (Moridu et al., 2023), as many fintech startups now compete directly with traditional banks, particularly in lending. The Financial Services Authority (OJK) reports 101 licensed fintech operators in Indonesia, while the Indonesian Fintech Association (Aftech) recorded 366 member companies at the end of 2022 a 3.97% increase dominated by online lending (102 firms), Digital Financial Innovation (IKD) (84 firms), and digital payment services (39 firms).

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According to the Indonesian Fintech Association (AFTECH, 2023), the number of AFTECH members grew significantly between 2016 and 2022, with the highest increase in 2018, rising 125.31% from 79 to 178 members. AFTECH attributes the growth of Indonesia's fintech industry to factors such as the working-age population, internet-based economy, unbanked and underbanked populations, financial and digital literacy, and fintech investments. Fintech has become an integral part of the financial ecosystem, enabling easier and more affordable access to financial services, particularly for rural populations without traditional banking systems. The Basel Committee on Banking Supervision (2018) notes that banks and venture capital have made substantial investments in fintech, reflecting expectations of transformative industry changes. Global venture capital investment in fintech also illustrates this trend: from 2010 to 2019, total funding rose sharply to USD 216.8 billion, dropped below USD 125 billion in 2020, surged above USD 225 billion in 2021, and then declined in 2022 and 2023 to USD 113.7 billion, indicating fluctuating but sustained investor confidence in the sector (Statista, 2024).

Technology has significantly advanced the primary goal of enhancing service standards and economic performance in the financial sector. Customers can conduct financial transactions anytime and anywhere using devices connected to the internet. Current financial technologies include mobile banking, which links mobile phones to bank accounts and staff; internet banking, which provides financial services through bank-operated websites; peer-to-peer lending, enabling individuals to borrow and lend funds without relying on banks as intermediaries; blockchain, a digital ledger that records cryptocurrency transactions openly and chronologically; as well as credit cards and automated teller machines (ATMs) for financial transactions. The increased adoption of these services facilitates higher transaction volumes, leading to greater revenue and improved profitability (Mayasari et al., 2021). In the banking industry, profitability is crucial as it measures a bank's effectiveness and business income within a given period. Profitability reflects a company's ability to generate profit, and higher profits indicate better management performance in executing business activities (Mayasari et al., 2021). The use of banking fintech services has positively impacted banks' financial performance; however, according to Christabel (2021), quoting Tjandra Gunawan, President Director of Bank Neo Commerce, fintech adoption also presents several challenges. First, increased fintech usage can raise banks' operational costs for promotion, education, and technology investment. Second, security concerns regarding fintech services make underbanked customers hesitant to adopt them. Third, the digitalization of the financial sector alters the ecosystem, potentially causing disruptions and escalating VUCA (Volatility, Uncertainty, Complexity, Ambiguity) risks. These issues may negatively affect financial performance, as supported by Salma Indrianti (2023), who found that large technology investments, high advertising budgets, and customers' reliance on traditional banking in developing countries contribute to a slower adaptation to fintech, ultimately impacting banks' financial outcomes.

According to the BRI website, the bank has demonstrated positive outcomes from its digital transformation. In 2020, mobile banking transactions through the Brimo platform increased by 66.2%, reaching IDR 1.27 billion, while the number of Brimo

users grew by 56.4% in 2021 to 14.2 million. Internet banking usage also rose significantly, with BRI recording 2.7 billion transactions by the end of December 2020, an increase of 132.2%. Studies examining the impact of technology on bank financial performance in various countries often reference Schumpeter's innovation theory (Shanmugam & Nigam, 2020), which posits that technological advancements create opportunities and profits, encouraging financial institutions to invest in innovative products. This, in turn, attracts further technology investment within the financial sector, gradually reducing profit margins for each innovation.

This study uses Return on Assets (ROA) and Return on Equity (ROE) to measure banks' financial performance. In addition to these variables, control variables such as Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (BOPO), and Firm Size (SIZE) are included to account for other factors influencing financial performance. Banking fintech services represent strategic plans determined by management based on available resources, where ROA reflects how effectively assets or fintech adoption are utilized to develop bank services or products, ultimately driving profit growth (Sutarti et al., 2019). Meanwhile, ROE indicates how efficiently shareholders' funds are used by bank management, which can enhance investment returns (Sutarti et al., 2019). Therefore, to obtain a comprehensive assessment of financial performance, this study employs both ROA and ROE and aims to examine the "Effect of Financial Technology (Fintech) Development on the Financial Performance of Conventional Banks."

2. Theoretical Background

Schumpeter's Theory of Innovation: Joseph Alois Schumpeter, in his 1934 book *The Theory of Economic Development*, argued that the key driver of economic growth is the role of innovators and entrepreneurs. He posited that innovation can take various forms, such as creating new products, opening new markets, or discovering new resource supplies. Schumpeter's theory links innovation to technological advancement, which generates opportunities and profits, thereby encouraging financial institutions or banks to invest in innovative products. This, in turn, attracts other industry players to invest in technology, ultimately eroding the profit margins from innovation (Shanmugam & Nigam, 2020). Thus, when banks implement fintech in their services, financial performance may improve, but increased competition among banks offering similar facilities can diminish the profit margin from such innovations.

Financial performance: Financial performance is a measure used to assess the effectiveness and efficiency of an entity, particularly banks, in managing resources to achieve predetermined financial goals. According to Kasmir (2022), financial performance can be evaluated through financial statement analysis, which reflects a company's financial condition, operating results, and cash flows over a specific period. This assessment enables both internal stakeholders, such as management, and external parties, including investors, creditors, and regulators, to gauge the success of a bank's operations and business strategies. In the banking context, financial performance is commonly measured using ratios such as Return on Assets (ROA), Return on Equity (ROE), Net Interest Margin (NIM), and Operational Expenses to Operating Income (BOPO). ROA indicates a bank's ability to generate profit from its total assets, ROE measures the profitability for shareholders, NIM reflects the efficiency in generating

interest income from productive assets, and BOPO demonstrates operational efficiency, with lower values indicating higher efficiency (Rahman & Santoso, 2023).

Return On Assets (ROA): Return on Assets (ROA) is a key financial ratio used to assess a company's, particularly a bank's, ability to generate net profit from its total assets. It measures how efficiently a bank utilizes its assets to create profit, serving as a primary indicator of profitability and operational efficiency. According to Muslimin et al. (2023), ROA reflects management's effectiveness in leveraging all company resources to achieve earnings, highlighting the relationship between net income and total assets. A higher ROA indicates more efficient asset management. The ratio is calculated as $ROA = \text{Net Income} / \text{Total Assets}$. Its main advantages include providing a clear picture of asset efficiency in generating profit and allowing for easy calculation and consistent comparison across banks or periods. However, ROA has limitations, as it does not directly account for risk; two banks with identical ROA values may differ significantly in credit or liquidity risk.

Return On Equity (ROE): Return on Equity (ROE) is a key financial indicator used to evaluate a bank's ability to generate net profit from shareholders' equity, reflecting the returns that investors earn on their capital and the management's effectiveness in utilizing its own funds to achieve profits. As a primary measure of banking profitability, ROE is particularly important due to banks' typically high leverage. Its main advantage lies in providing a direct view of shareholder returns and the efficiency of capital use. However, ROE is heavily influenced by capital structure and leverage, meaning that two banks with the same ROE may have different risk profiles. It does not explicitly account for risk and can be manipulated through aggressive financing or capital policies, making cross-bank comparisons potentially misleading if not considered alongside other ratios such as ROA, NPL, CAR, and LDR. ROE is generally calculated as Net Profit divided by Total Equity.

Hypothesis Development

The Effect of Financial Technology on Return on Assets (ROA).

Internet banking refers to the use of the internet as a channel for delivering banking services, including traditional functions such as balance inquiry, statement printing, fund transfers, and electronic bill payments without visiting a branch. By using internet banking, transaction costs at branches can be reduced by 40–80% for the same transactions conducted online, which lowers operational and physical overhead costs and can enhance bank profitability (Alfatihah & Sundari, 2021). Banks offering internet banking can increase income through service fees while using it to complement rather than replace physical branches (Del Gaudio et al., 2021; Syahputra & Suparno, 2022; Fatoki & Mary, 2019). Studies, including those in Lebanon, show a positive effect of internet banking adoption on financial performance (Chaarani & Abiad, 2018). Internet banking contributes to higher profitability by reducing overhead costs, with evidence of significant increases in ROA within the first six months and continuous growth over three years (Hernando, 2007). Banks with internet banking generally demonstrate higher ROA and ROE than those without (Yuliati et al., 2020), although mapping studies indicate that

60% of banks providing internet banking still underperform, with 45.71% showing significant positive impacts (Sofiana, 2014). Similarly, mobile banking has been found to improve profitability measured by ROA, albeit sometimes not significantly (Imamah & Ayu Safira, 2021; Kathuo et al., 2015). SMS banking also allows customers to conduct transactions, check balances, and pay bills without internet access, and studies indicate it has a positive and significant impact on bank financial performance (Amali & Selvi, 2021). Based on this evidence, the following hypothesis is proposed: H1a: Internet banking has a positive effect on return on assets, H1b: Mobile banking has a positive effect on return on assets. H1c: SMS banking has a positive effect on return on assets.

The Influence of Financial Technology on Return on Equity (ROE).

Mobile banking, commonly referred to as m-banking, is a system that enables users to access financial transactions via smartphones or other wireless mobile devices, offering services such as account management, bill payments, and customized financial information (Imamah et al., 2021). Several studies indicate that mobile banking positively affects bank financial performance. For instance, Melky Fuadi et al. (2022) found that mobile banking enhances operational revenue as it is a favored fintech adoption product, offering diverse, advanced, and attractive financial services. Similarly, Rihana Anis (2023) reported that during the COVID-19 pandemic, mobile banking became the most widely used digital financial tool due to its 24-hour online accessibility, facilitating financial services and increasing transaction volumes. Mary and Isola (2019) also confirmed that mobile banking has a significant positive impact on the financial performance of banks in Kenya. Moreover, Indrianti, Gamayuni, and Susilowati (2023) highlighted that SMS banking positively influences bank performance by expanding access to customers in areas with limited internet coverage, increasing transaction volumes and customer loyalty. In addition, Siddik et al. (2016) empirically demonstrated that e-banking contributes positively to bank performance in Bangladesh, as measured by ROE, ROA, and NIM, using panel data from 13 banks over 2003–2013. Based on these findings, the following hypothesis can be formulated: H2a: Internet banking has a positive effect on Return on Equity, H2b: Mobile banking has a positive effect on Return on Equity. H3c: SMS banking has a positive effect on Return on Equity.

3. Methodology

This study employs a quantitative approach using secondary data obtained from documents, reports, and official websites. Quantitative research, based on positivist philosophy, involves specific populations or samples, often using purposive or random sampling, with data analyzed statistically to test hypotheses (Sugiyono, 2017, 2019; Umar, 2018; Arikunto, 2019). The population comprises all conventional banks listed on the Indonesia Stock Exchange (BEI) during 2020–2022, while the sample includes banks with publicly available financial reports and transaction data for internet banking, mobile banking, and SMS banking. Data were collected systematically via documentation from BEI and the banks' official websites. Descriptive statistics summarize the data using mean, minimum, maximum, and standard deviation values to provide an overview of financial performance and digital banking services (Ghozali, 2021). Prior to multiple linear regression, classical assumption tests including normality (Central Limit Theorem, $n > 30$), multicollinearity (tolerance > 0.10 ; VIF < 10), heteroskedasticity (Glejser test,

Sig. > 0.05), and autocorrelation (Durbin-Watson test) ensure the regression model meets BLUE criteria (Ghozali, 2018; Gujarati & Porter, 2012; Juliandi et al., 2014). Multiple linear regression is then applied to examine the effects of Internet Banking, Mobile Banking, SMS Banking, Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (BOPO), and firm size (SIZE) on financial performance. Hypotheses are tested using the coefficient of determination (R^2) for explanatory power, the F-test for simultaneous significance, and the t-test for partial effects, with significance set at $p < 0.05$ (Sugiyono, 2019; Ghozali, 2021). The operational definitions and measurements of all variables are presented in the table below.

Table 1. Operational Definition of Variables

Variable	Operational Definition	Indicators / Sub-variables
Dependent	Financial performance: a measure of a company's effectiveness and efficiency in managing resources to achieve organizational goals, reflected in financial statements.	- ROA (Return on Assets): the ability of a bank to generate profit from total assets. - ROE (Return on Equity): the ability of a bank to generate profit from shareholders' equity.
Independent	Internet Banking: Banking services using the internet for online transactions, transfers, payments, and account monitoring.	- Online account access - Fund transfers - Bill payments
	Mobile Banking: Digital banking service via a mobile application for fast and convenient transactions.	- Balance inquiry - Fund transfers - Bill payments - Prepaid top-up - Investments
	SMS Banking: Electronic banking service via SMS for simple financial transactions.	- Balance inquiry - Inter-account transfers - Bill payments - Prepaid top-up
Control	Capital Adequacy Ratio (CAR): Ratio showing the bank's ability to provide minimum capital to cover potential losses, reflecting capital stability.	- Level of capital adequacy to cover risks
	BOPO: Ratio of operating expenses to operating income, measuring bank operational efficiency.	- Operating expense to income ratio
	Firm Size (SIZE): Indicator of a bank's scale based on total assets, reflecting capacity and ability to manage funds.	- Total assets (Ln Total Assets)

4. Empirical Findings/Result

Research Data Description

The study sampled Indonesian banks listed on the IDX (2020–2022) using purposive sampling (Table 2).

Table 2. Sample Selection Criteria

Description	Jumlah
Banking companies listed on the Indonesia Stock Exchange (IDX) during 2020–2022	49
Banking companies whose financial statements were published on the official website during 2020–2022 and provided data on the number of transactions using fintech during 2020–2022	32
Total sample for the 2020–2022 research period	96

Source: Secondary data processed by the author, 2025

Data Analysis Results

Descriptive Statistical Test.

Descriptive statistics were conducted to determine the mean, minimum, maximum, and standard deviation of each variable studied, with the results and corresponding explanations presented in Table 3.

Table 3. Descriptive Statistical Test Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
IB	96	11.211.000	580.085.000	719.348.843,75	1.021.034.302,302
MB	96	10.970.000	3.200.990.000	609.040.937,50	602.635.324,610
SMS	96	7.213.000	881.549.000	132.437.916,67	166.027.090,791
CAR	96	5,53	92,51	21,4380	16,05289
BOPO	96	-26645,41	241031,35	1003,0611	25145,24661
SIZE	96	28,00	35,23	31,8194	1,82098
ROA	96	-18,20	4,41	0,0328	3,08792
ROE	96	-124,91	21,54	0,8761	18,22732

Source: Processed data, 2025 (SPSS output)

The descriptive statistics show significant variation in digital banking usage and financial performance across conventional banks. Internet banking (IB) transactions range from 11,211,000 to 580,085,000, with a mean of 719,348,844 and a high standard deviation of 1,021,034,302, indicating diverse adoption levels. Mobile banking (MB) is the most widely used service, with transactions ranging from 10,970,000 to 3,200,990,000, averaging 609,040,938 and a standard deviation of 602,635,325, reflecting substantial differences among banks. SMS banking shows lower usage, with a minimum of 7,213,000, a maximum of 881,549,000, and a mean of 132,437,917, suggesting a shift toward more modern application-based services. For control variables, Capital Adequacy Ratio (CAR) averages 21.44% with a high deviation, well above Bank Indonesia's 8% minimum, indicating generally healthy capitalization but significant variation. Operational efficiency measured by BOPO exhibits wide disparities (mean 1,003.06; SD 25,145.25), while bank size (SIZE, measured as log

total assets) ranges from 28.00 to 35.23 (mean 31.82), reflecting notable differences between large and small banks. Profitability indicators show mixed performance: Return on Assets (ROA) ranges from -18.20 to 4.41 with a low mean of 0.033, and Return on Equity (ROE) ranges from -124.91 to 21.54 with a mean of 0.88, highlighting substantial fluctuations in bank profitability due to variations in capitalization strategies, operational efficiency, and equity management.

Classical Assumption Test.

The normality test using the Central Limit Theorem indicates that, with a sample size of 96, the data can be considered normally distributed, as the assumption of normality can be ignored for large samples ($n > 30$). Multicollinearity tests show that all independent and control variables have tolerance values between 0.520 and 0.940 and VIF values ranging from 1.064 to 1.925, indicating no strong linear relationship among the variables and confirming that the regression model is free from multicollinearity. Heteroskedasticity tests using the Glejser method reveal that most variables do not exhibit heteroskedasticity. For the ROA model, Internet Banking, Mobile Banking, SMS Banking, CAR, and BOPO are free from heteroskedasticity, while SIZE shows unequal residual variance due to differences in bank size. Similarly, for the ROE model, IB, MB, SMS, and BOPO do not show heteroskedasticity, but CAR and SIZE display unequal residual variance. Durbin-Watson tests indicate no autocorrelation in either ROA (DW = 1.764) or ROE (DW = 1.821) models, as the values fall within the acceptable range, confirming that the regression models meet the assumptions of independence of residuals.

Multiple Linear Regression Analysis.

The results of the multiple linear regression analysis can be seen in Table 4.

Table 4. Results Of Multiple Linear Regression Analysis On ROA

Variable	B
(Constant)	-30,442
IB	9,796
MB	-4,942
SMS	8,352
CAR	0,057
BOPO	1,511
SIZE	0,923

Source: Processed data, 2025 (SPSS output)

Based on the table, the regression equation can be drawn up as follows::

$$ROA = -30,442 + 9,796IB + (-4,942)MB + 8,352SMS + 0,057CAR + 1,511BOPO + 0,923SIZE + e$$

Based on the regression equation, the interpretation is as follows: The constant value of -30.442 indicates that if all independent variables are zero, the ROA would be -30.442, suggesting a declining financial performance in the absence of these factors. The coefficient for internet banking is 9.796, meaning that a one-unit increase in

internet banking transactions increases ROA by 9.796 units, assuming other variables remain constant. Conversely, the mobile banking coefficient of -4.942 implies that a one-unit increase in mobile banking transactions reduces ROA by 4.942 units. SMS banking has a positive effect, with a coefficient of 8.352, indicating that an increase of one unit in SMS banking transactions raises ROA by 8.352 units. The Capital Adequacy Ratio (CAR) coefficient of 0.057 shows that a one-unit increase in CAR slightly increases ROA, reflecting the bank's enhanced ability to manage risks and generate profits from total assets. BOPO has a positive coefficient of 1.511, indicating that a one-unit increase in operational efficiency improves ROA by 1.511 units, while the SIZE coefficient of 0.923 suggests that larger banks tend to achieve higher ROA by 0.923 units per one-unit increase in size.

Table 5. Results Of Multiple Linear Regression Analysis On ROE

Variable	B
(Constant)	-173,336
IB	-4,804
MB	5,049
SMS	6,000
CAR	0,307
BOPO	0,000
SIZE	5,241

Source: Processed data, 2025 (SPSS output)

Based on the table, the following regression model can be constructed:

$$ROE = -173,336 + (-4,804)IB + 5,049MB + 6,000SMS + 0,307CAR + 0,000BOPO + 5,241SIZE + e$$

Based on the regression results, the interpretation can be summarized as follows: The constant of -173.336 indicates that when all independent and control variables are zero, the bank's ROE would be -173.336, suggesting that financial performance heavily depends on digital services and internal factors such as capitalization and operational efficiency. The coefficient for internet banking is -4.804, implying that a one-unit increase in internet banking transactions decreases ROE by 4.804 units, assuming other variables remain constant, indicating that internet banking usage has not yet positively impacted bank profitability. In contrast, mobile banking and SMS banking have positive effects, with coefficients of 5.049 and 6.000, respectively, showing that each one-unit increase in these transactions raises ROE by the corresponding amounts. Capital Adequacy Ratio (CAR) has a positive coefficient of 0.307, indicating that higher CAR slightly improves ROE, while BOPO has a coefficient of 0.000, suggesting that changes in operational efficiency have negligible impact. Finally, bank size positively affects ROE with a coefficient of 5.241, meaning larger banks tend to generate higher returns on equity.

Hypothesis Test.

The results of the hypothesis test are as described below

Coefficient of Determination Test (R^2)

The results of the coefficient of determination test can be seen in table 6.

Table 6. R^2 Test Results On ROA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,458	0,210	0,156	2,83635

Source: Processed data, 2025 (SPSS output)

Based on the table, the Adjusted R^2 value is 0.156, indicating that 15.6% of the variation in ROA can be explained by the independent variables in the study Internet Banking, Mobile Banking, and SMS Banking along with the control variables, Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (BOPO), and Bank Size (SIZE), while the remaining 84.4% is influenced by factors outside the research model.

Table 7. R^2 Test Results On ROE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,464	0,216	0,163	16,67757

Source: Processed data, 2025 (SPSS output)

Based on the table, the Adjusted R^2 value is 0.163, indicating that 16.3% of the variation in ROA can be explained by the independent variables in the study Internet Banking, Mobile Banking, and SMS Banking along with the control variables, namely Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (BOPO), and Bank Size (SIZE), while the remaining 83.7% is influenced by factors outside the research model.

F test (ANOVA)

The results of the F test can be seen in table 8

Table 8. F Test Results On ROA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	189,855	6	31,642	3,933	0,002
Residual	715,996	89	8,045		
Total	905,850	95			

Source: Processed data, 2025 (SPSS output)

Based on the table, the significance value is 0.002, which is lower than the significance level used in this study ($\alpha = 0.05$). This indicates that the regression model is simultaneously significant, meaning that all independent variables Internet Banking, Mobile Banking, and SMS Banking along with the control variables CAR, BOPO, and SIZE, collectively have a significant effect on ROA.

Table 9. F Test Results On ROE

	Sum of Squares	df	Mean Square	F	Sig.
Regression	6807,786	6	1134,631	4,079	0,001
Residual	24754,570	89	278,141		
Total	31562,356	95			

Source: Processed data, 2025 (SPSS output)

Based on the table, the significance value of 0.001 is lower than the research significance level of $\alpha = 0.05$, indicating that the regression model is simultaneously significant. This means that all independent variables Internet Banking, Mobile Banking, and SMS Banking together with the control variables CAR, BOPO, and SIZE collectively have a significant effect on ROE.

t-test

The results of the t-test can be seen in Table 10.

Table 10. Results Of T-Test On ROA

Variable	B	Sig.
(Constant)	-30,442	0,000
IB	9,796	0,793
MB	-4,942	0,463
SMS	8,352	0,681
CAR	0,057	0,014
BOPO	1,511	0,209
SIZE	0,923	0,000

Source: Processed data, 2025 (SPSS output)

The results indicate that internet banking (coefficient = 9.796, $p = 0.793$), mobile banking (coefficient = -4.942, $p = 0.463$), and SMS banking (coefficient = -8.352, $p = 0.681$) do not have a significant effect on ROA, suggesting that increases in these digital banking transactions alone do not directly enhance bank profitability, with SMS banking's insignificance potentially due to its declining popularity in favor of more modern and efficient app-based services. In contrast, CAR (coefficient = 0.057, $p = 0.014$) and bank size (SIZE) (coefficient = 0.923, $p = 0.000$) show a positive and significant impact on ROA, whereas BOPO (coefficient = 1.511, $p = 0.209$) does not significantly affect ROA.

Table 11. Results Of T-Test On ROE

Variable	B	Sig.
(Constant)	-173,336	0,000
IB	-4,804	0,827
MB	5,049	0,898
SMS	6,000	0,615
CAR	0,307	0,024
BOPO	0,000	0,126
SIZE	5,241	0,000

Source: Processed data, 2025 (SPSS output)

The results indicate that internet banking (coefficient = -4.804, $p = 0.827$), mobile banking (coefficient = 5.049, $p = 0.898$), SMS banking (coefficient = 6.000, $p = 0.615$), and BOPO (coefficient = 0.000, $p = 0.126$) do not have a significant effect on ROE, as their significance levels exceed 0.05. In contrast, CAR (coefficient = 0.307, $p = 0.024$) and SIZE (coefficient = 5.241, $p = 0.000$) have a positive and significant effect on ROE, with significance levels below 0.05, indicating that higher capital adequacy and larger bank size are associated with increased ROE.

5. Discussion

The Effect of Internet Banking on Return on Assets

The test results show that the internet banking variable (IB) has a significance value of $0.793 > 0.05$, indicating that internet banking does not affect Return on Assets (ROA) in conventional banks listed on the Indonesia Stock Exchange (IDX) during 2020–2022. This may be due to the fact that developing internet banking systems requires substantial investments, including infrastructure costs, cybersecurity enhancements, and periodic technology upgrades. If the revenue generated is not sufficient to cover these costs, its contribution to ROA becomes insignificant.

These findings are consistent with previous studies, such as Haryono and Widiyanti (2023), who stated that internet banking does not always have a significant impact on bank profitability, particularly asset performance measured by ROA. This suggests that although internet banking is an important innovation in the digital banking industry, its impact on financial performance still depends on customer adoption levels and the effectiveness of technology implementation.

The Effect of Internet Banking on Return on Equity

The test results also indicate that the internet banking variable (IB) has a significance value of $0.827 > 0.05$, meaning that internet banking does not significantly affect Return on Equity (ROE) in conventional banks listed on the IDX during 2020–2022. This result implies that changes in internet banking activity or transaction volume do not substantially influence the bank's equity returns. The insignificant effect of internet banking on ROE suggests that the utilization of internet banking services has not yet enhanced the bank's ability to generate profit from its capital.

Although theoretically, internet banking can improve operational efficiency and expand service reach, these benefits have not yet directly translated into higher net income, which is a key component in calculating ROE. This may be because the number of internet banking users has not reached an optimal level. In modern banking developments, customers increasingly prefer mobile banking due to its convenience and accessibility. This shift in preference results in relatively low internet banking transaction volumes, limiting the revenue contribution from these services.

These results align with the study by Rachmawati and Putra (2023), which stated that internet banking transactions do not significantly affect bank profitability, including ROE, because the revenue generated from digital services remains relatively small compared to the operational costs incurred for system development.

The Effect of Mobile Banking on Return on Assets

The test results show that the mobile banking variable (MB) has a significance value of $0.463 > 0.05$, indicating that mobile banking does not significantly affect ROA in conventional banks listed on the IDX during 2020–2022. This may be because ROA is more sensitive to productive asset performance, such as credit distribution and investments. Mobile banking does not directly influence the allocation of productive assets, so its impact on ROA is limited. Mobile banking primarily serves as a transaction service rather than a tool that increases the bank's productive assets.

These findings are consistent with the study conducted by Wibowo and Darmawan (2022), which stated that mobile banking does not have a significant effect on ROA because the revenue generated from digital transactions has not yet improved the effectiveness of asset utilization.

The Effect of Mobile Banking on Return on Equity.

The test results indicate that the mobile banking variable (MB) has a significance value of $0.898 > 0.05$, meaning that mobile banking does not affect Return on Equity (ROE) in conventional banks listed on the Indonesia Stock Exchange (IDX) during 2020–2022. This may be because the revenue generated from mobile banking services is relatively small compared to the bank's main sources of income, such as interest income and financing activities. Mobile banking typically produces limited fee-based income, as customer transactions are dominated by routine activities such as fund transfers, bill payments, and digital product purchases, which only generate small administrative fees. With such minimal revenue contribution, increased use of mobile banking is insufficient to significantly boost the bank's net profit, making its impact on ROE negligible. These findings are in line with Safitri (2020), who stated that mobile banking primarily serves as a service channel, so its effect on capital-based profitability tends to be limited.

The Effect of SMS Banking on Return on Assets

The test results indicate that the SMS banking variable (SMS) has a significance value of $0.681 > 0.05$, meaning that SMS banking does not affect Return on Assets (ROA) in conventional banks listed on the Indonesia Stock Exchange (IDX) during 2020–2022. This may be because SMS banking is a digital service that is simple and has limited features compared to internet banking and mobile banking. Most transactions conducted through SMS banking only include balance inquiries, transaction notifications, or transfers with certain limits. These feature limitations make SMS banking not the primary transaction channel for customers, so its economic value for the bank is relatively small. With minimal revenue contribution, SMS banking services are unable to provide a significant increase in profit as measured through asset efficiency. These findings are in line with Hasanah (2018), who stated that SMS banking does not have a significant effect on Return on Assets because the features available in SMS banking are very limited and cannot increase the transaction volume that generates fee-based income for the bank.

The Effect of SMS Banking on Return on Equity

The test results indicate that the SMS banking variable (SMS) has a significance value of $0.615 > 0.05$, meaning that SMS banking does not affect Return on Equity (ROE) in conventional banks listed on the Indonesia Stock Exchange (IDX) during 2020–2022. This may be due to the development of mobile banking applications that offer a more intuitive interface, higher security, and faster transaction speed, making SMS banking less popular. In the context of current digital banking competition, SMS banking is no longer a strategic service for improving financial performance, including Return on Equity, so an increase in transactions through this service does not produce a significant effect. These findings are in line with Setiawan and Widiastuti (2019), who stated that SMS banking services do not have a significant contribution to financial performance, as their usage continues to decline with the increasing adoption of mobile banking.

6. Conclusions

Based on the analysis, this study concludes that Internet Banking, Mobile Banking, and SMS Banking do not significantly affect Return on Assets or Return on Equity, as indicated by significance values of 0.793, 0.827, 0.463, 0.898, 0.681, and 0.615, respectively. The limited impact is attributed to high technology costs, suboptimal usage, shifting customer preferences toward mobile banking, and the restricted functionality of SMS banking. The study has several limitations, including its focus on only three digital banking services, reliance on transaction volume as the sole indicator, and a relatively short data period of 2020–2022. Other relevant factors, such as transaction value, active user numbers, customer satisfaction, system security, and operational costs, were not examined. Accordingly, future research is recommended to expand the scope by including additional digital banking services such as e-wallets, QRIS, digital onboarding, and virtual accounts, incorporate broader performance indicators beyond transaction counts, and adopt a longer study period to better capture the rapidly evolving trends in digital banking.

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