



Effect of Mobile Banking and Cash Management on the Financial Performance of State-Owned Banks

Nyna Amaliah Sari^{1*}, Muhammad Yunus Kasim², Fatlina Zainuddin³

¹⁻³Master of Management Program, Postgraduate School, Faculty of Economics and Business, Tadulako University, Palu

*Author correspondence: nyna.amaliah@gmail.com

Abstract. This study aims to analyze the effect of Mobile Banking and Cash Management System transactions on the financial performance of state-owned banks, both directly and through the Cost Efficiency Ratio (CER) as a mediating variable. The study employs a quantitative approach using secondary data obtained from the annual reports of PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, and PT Bank Mandiri (Persero) Tbk for the 2020–2024 period. The data were analyzed using panel data regression and mediation testing. The results show that Mobile Banking has a significant effect on financial performance and operational efficiency. The Cash Management System also has a significant effect on both financial performance and operational efficiency. Furthermore, the Cost Efficiency Ratio (CER) has a significant effect on financial performance and is able to mediate the relationship between. Mobile Banking and Return on Assets, as well as the relationship between the Cash Management System and Return on Assets. These findings indicate that the success of digital transformation is determined not only by increases in digital transaction volume, but also by banks' ability to improve operational efficiency so that the benefits of digitalization can be translated into higher profitability.

Keywords: Cash Management System; Cost Efficiency Ratio; Mobile Banking; Panel Data Regression; Return on Assets.

1. INTRODUCTION

Digital transformation has become a major driver of change in the global financial sector. Developments in information technology, the internet, artificial intelligence, and mobile devices have driven fundamental changes in the business models of financial institutions. Businesses must be prepared to anticipate future changes, including by utilizing technology in their operations. Technology is crucial and is a key factor for surviving and competing in the modern business world. Digitalization is no longer merely an additional innovation; it has become a strategic necessity for improving efficiency, expanding service coverage, and creating competitive advantage. Technological and internet advances have transformed conventional financial services into services that are more modern and more accessible to the public. Along with digitalization, computer-based administration and systems have become essential for companies, with corporate administration and payments being conducted digitally (electronically).

In managing corporate finances electronically, companies may cooperate with financial service providers, namely banks. In the banking industry, digitalization enables process automation, faster transactions, and lower operating costs. Digital technology also changes the pattern of interaction between banks and customers, from branch-based services to digital platform-based services. Banks compete to innovate by creating and offering various

conveniences through digital transaction products and services that enable users to conduct many types of transactions online or through mobile devices without time and location constraints. Digital transactions offer numerous advantages and options that allow users to transact according to their needs. The digital transaction transformation undertaken by banks encompasses core operating systems, business models, and corporate strategy.

The application of digital technology in banking contributes to greater spending efficiency and wider market reach. As banks with large asset bases and extensive service networks, state-owned banks face demands to continuously improve service quality and operational efficiency in order to remain competitive in an increasingly intense industry. Digital transaction services are one of the main strategies adopted to address these challenges. Such services include Automated Teller Machines (ATMs), phone banking, SMS banking, mobile banking, internet banking, QRIS transactions, online account opening, and digital lending. In this context, digital service development is implemented by strengthening mobile banking (m-banking) for retail or individual customers and the Cash Management System (CMS) for corporate customers. M-banking and CMS are important representations of banking digitalization that affect not only customer satisfaction but also potentially the financial performance of banks. The Resource-Based View (RBV) is a strategic perspective emphasizing that competitive advantage and superior corporate performance are determined by a company's ability to manage and utilize strategic internal resources. Under the RBV framework, resources capable of creating sustainable competitive advantage are valuable, rare, inimitable, and non-substitutable, commonly known as the VRIN criteria. In the digital economy, technological capabilities and digital transformation are viewed as strategic resources that possess these characteristics.

The inconsistency of empirical findings from previous studies indicates that the effect of digitalization may not be direct, but may instead operate through an intermediary mechanism that links digital transformation with improved financial performance. In an intermediation-based banking industry that is highly sensitive to cost structures, operational efficiency is a theoretically relevant variable for explaining this causal pathway. Given the research gap and the phenomenon that profitability has increased more moderately than digital transaction volume, this study positions the Cost Efficiency Ratio (CER) as a mediating variable to provide a more comprehensive analysis.

This study aims to determine whether the independent variables, namely Mobile Banking and the Cash Management System, affect financial performance, and whether the mediating variable, the Cost Efficiency Ratio, mediates the effects of the independent variables

(Mobile Banking and the Cash Management System) on the financial performance of state-owned banks.

2. RESEARCH METHOD

Research Design and Epistemological Approach

This study uses a causal descriptive quantitative approach to analyze cause-and-effect relationships among the variables examined. The data are secondary quarterly data obtained from annual reports and officially published financial statements of PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, and PT Bank Mandiri (Persero) Tbk for the 2020–2024 period. Purposive sampling was applied based on the completeness of financial statement data and digital banking transaction data, resulting in a total of 60 observations (3 banks $\times$ 5 years $\times$ 4 quarters).

The operational definitions of the research variables are as follows:

- a. Mobile Banking (X1): Measured using the transaction volume of each bank's retail mobile banking service (in IDR trillions).
- b. *Cash Management System (X2): Measured using the transaction volume of each bank's corporate-segment cash management system service (in IDR trillions).*
- c. Financial Performance (Y): Proxied by Return on Assets (ROA), calculated using the following formula:

$$ROA = (Net\ Income / Total\ Assets) \times 100\%$$

- d. Operational Efficiency (M): Proxied by the Cost Efficiency Ratio (CER), calculated using the following formula:

$$CER = (Non-Interest\ Expenses / (Net\ Interest\ Income + Fee-Based\ Income)) \times 100\%$$

The sample was selected using purposive sampling, namely the determination of a sample based on specific criteria aligned with the research objectives. The research objects were limited to PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, and PT Bank Mandiri (Persero) Tbk. These three banks were selected because they are state-owned banks with relatively large asset bases, broad operational coverage, extensive customer bases, and substantial and continuous digital transaction activity during the observation period.

The sample restriction was also influenced by data availability and consistency. This study requires data that simultaneously cover Mobile Banking transaction volume, Cash Management System transaction volume, the Cost Efficiency Ratio, and Return on Assets during 2020–2024. Not all state-owned banks present these digital transaction data completely,

consistently, and comparably in their annual reports or published financial statements. Therefore, only banks meeting all data-completeness criteria were included in the sample so that variable measurement and model testing could be conducted uniformly.

Analytical Strategy and Statistical Modeling

A panel data regression model was used to test the effect of digital services (Mobile Banking and CMS) on bank financial performance, as measured by ROA, and on operational efficiency, as measured by CER. Regression was performed using the following two models:

$$M_{it} = \alpha + \beta_{11}X_{1it} + \beta_{12}X_{2it} + e \text{ (First Model)}$$

$$Y_{it} = \alpha + \beta_{11}X_{1it} + \beta_{12}X_{2it} + e \text{ (Second Model)}$$

Estimation in the panel data regression model aims to obtain regression parameters, namely the intercept (constant) and the slope or regression coefficients. The use of panel data in regression analysis allows intercepts and regression coefficients to differ across companies and observation periods. The data were confirmed to satisfy the classical assumption tests, including the normality test (Q-Q Plot), multicollinearity test (VIF), and autocorrelation test (Durbin-Watson).

3. RESULTS AND DISCUSSION

Classical Assumption Tests

Classical assumption tests were conducted to determine whether the data were ready to be analyzed using multiple linear regression. Two sets of classical assumption tests were used because two regression models were analyzed. The first model uses the Cost Efficiency Ratio (CER) as the dependent variable, while the second uses Return on Assets as the dependent variable and the Cost Efficiency Ratio (CER) as the mediating variable.

The classical assumption test results show that the residuals are normally distributed, as indicated by the Q-Q scatter plot points clustering around the diagonal line. The VIF values for all independent variables are below 10 (Mobile Banking = 1.92, CMS = 1.57, CER = 1.39), indicating the absence of multicollinearity. The Durbin-Watson autocorrelation test produced a p-value of 0.789 (> 0.05), indicating no autocorrelation problem.

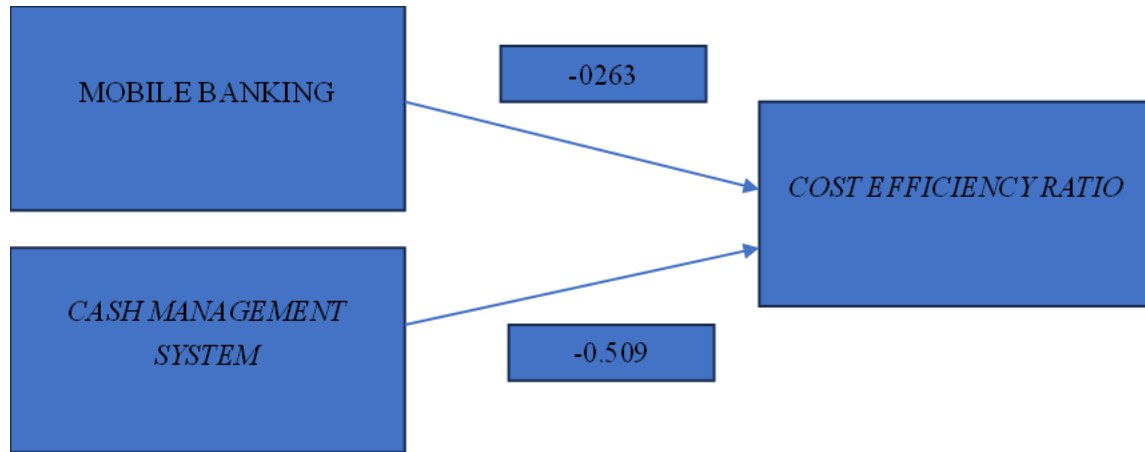
Panel Data Regression

A panel data regression model was used to test the effect of digital services (Mobile Banking and CMS) on bank financial performance, measured by ROA, and on operational efficiency, measured by CER.

Table 1. Regression Analysis Results for Model I (Dependent Variable: Cost Efficiency Ratio).

Variable	Coefficient (Estimate)	t-statistic	Significance (p)
Intercept	8.689	12.45	<0.001
Mobile Banking (X1)	-0.263	-3.44	0.001
Cash Management System (X2)	-0.509	-6.96	<0.001

Source: Processed data (2026).

**Figure 1.** Regression Model I.

The first regression model evaluates the effect of Mobile Banking and Cash Management System transaction volumes on operational efficiency, proxied by the Cost Efficiency Ratio (CER). Based on the estimation results, the regression equation can be written as $CER = 8.689 - 0.263MB - 0.509CMS + e$.

Mobile Banking has a coefficient of -0.263 with a probability value of 0.001. This result shows a negative and statistically significant relationship between Mobile Banking and CER. Because a lower CER reflects greater efficiency, this finding indicates that increased Mobile Banking transactions contribute to improved operational efficiency.

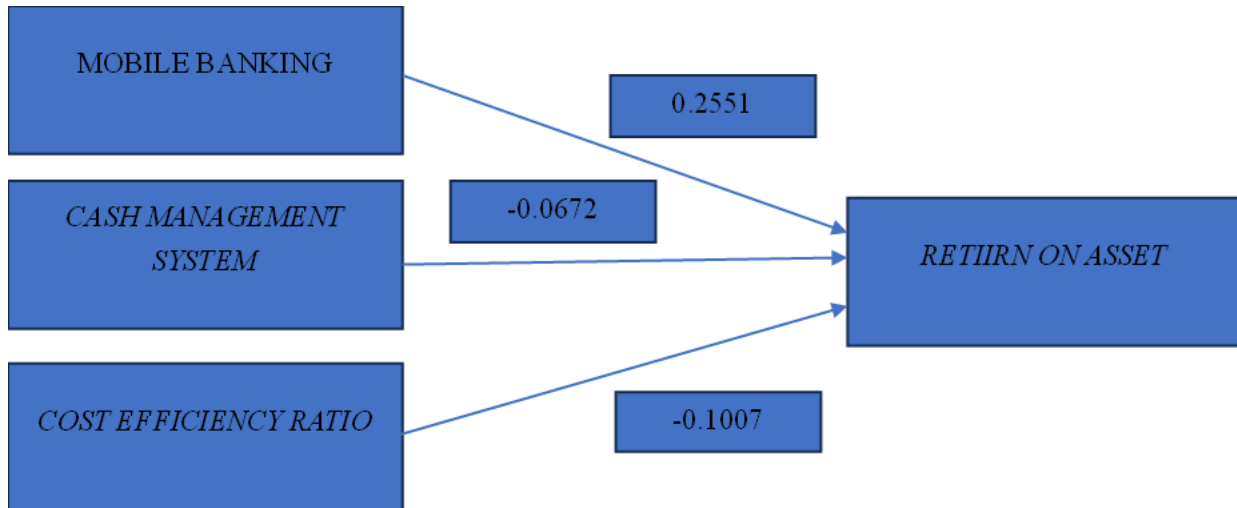
The Cash Management System also shows a negative and significant coefficient of -0.509, with a probability value below 0.001. The coefficient indicates that CMS has a relatively stronger relationship with operational efficiency than Mobile Banking. This result may be associated with the ability of CMS to automate transaction processes, corporate payment administration, and liquidity management.

Overall, the first model shows that both digital transaction channels can improve efficiency. The negative coefficients in this model should not be interpreted as adverse results; instead, they indicate that higher digital transaction activity is associated with a lower CER, making banks more efficient in controlling operating costs.

Table 2. Path Regression Analysis Results for Model II (Dependent Variable: Return on Assets).

Variable	Coefficient (Estimate)	t-statistic	Significance (p)
Intercept	0.1005	0.171	0.864
Mobile Banking (X1)	0.2551	2.808	0.007
Cash Management System (X2)	-0.0672	-2.032	0.047
Cost Efficiency Ratio (M)	-0.1007	-2.959	0.005

Source: Processed data (2026).

**Figure 2.** Regression Model 2.

The second regression model tests the direct effects of Mobile Banking, the Cash Management System, and the Cost Efficiency Ratio on financial performance, represented by Return on Assets (ROA). The resulting regression equation is $ROA = 0.1005 + 0.2551MB - 0.0672CMS - 0.1007CER + e$.

Mobile Banking has a positive and significant coefficient of 0.2551, with a probability value of 0.007. This finding shows that higher Mobile Banking transaction volume is associated with greater bank profitability. This positive contribution may reflect broader customer access, increased transaction frequency, higher fee-based income, and reduced dependence on conventional branch services.

In contrast, the Cash Management System has a coefficient of -0.0672 and remains significant at the 5 percent level, with a probability value of 0.047. This indicates that an increase in CMS transactions does not automatically increase profitability in the short term. One possible explanation is that CMS development and maintenance require substantial expenditure for technology infrastructure, system integration, and service support.

The Cost Efficiency Ratio has a coefficient of -0.1007 and is significant, with a probability value of 0.005. This result is consistent with theory because a higher CER indicates

a greater operating cost burden relative to income, thereby reducing profitability. Accordingly, a decline in CER is associated with an increase in ROA.

Taken together, these results show that financial performance is not driven solely by transaction growth. A bank's ability to convert digital activity into operational efficiency remains an important mechanism for generating stronger profitability.

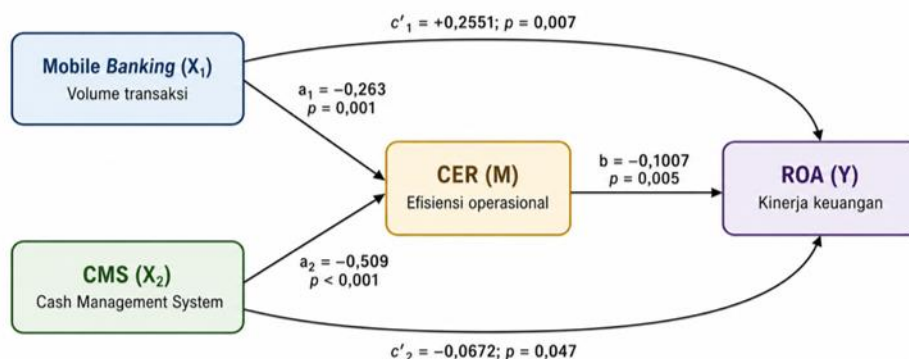


Figure 3. Overall Regression Model.

Hypothesis Testing

H1: Mobile Banking has a significant effect on Financial Performance

The results show that Mobile Banking has a positive and significant effect on financial performance, proxied by Return on Assets (ROA). This finding indicates that increased transactions through Mobile Banking can enhance a bank's ability to generate profit from the assets it manages. The result is consistent with Indrianti, Gamayuni, and Susilowati (2022), who explain that the use of financial technology in banking can improve financial performance through transaction convenience, wider service access, and increased customer activity. It also supports Siswati, Rahman, and Prasetyo (2025), who show that the effectiveness of digital banking at Bank Mandiri is associated with improved bank financial performance.

Theoretically, this positive effect may occur because Mobile Banking increases transaction frequency, expands service coverage without requiring additional branches, and creates opportunities to increase fee-based income. Abbasi, Alam, and Ismail (2021) explain that digital finance can improve firm performance when technology enhances business processes and creates economic value. Thus, the findings reinforce the view that Mobile Banking is not merely a customer service channel, but also a strategic resource capable of improving bank profitability.

H2: The Cash Management System has a significant effect on Financial Performance

The results show that the Cash Management System (CMS) has a negative and significant effect on ROA. This finding indicates that higher CMS transaction volume was not

immediately followed by an increase in bank profitability during the study period. This condition may arise because developing corporate services requires substantial investment in technology infrastructure, system integration, cybersecurity, application maintenance, and dedicated services for corporate customers.

Chen, Wu, and Yang (2023) explain that the adoption of digital technology in the corporate segment can improve bank efficiency, but its financial benefits depend on the scale of use, the degree of integration, and the bank's ability to monetize the service. Meanwhile, Vial (2019) emphasizes that digital transformation often requires changes in processes, organizational structures, and complementary investment before producing optimal financial outcomes. Therefore, the negative effect of CMS on ROA in this study may reflect a time lag between technology investment expenditure and the realization of its economic benefits.

H3: Mobile Banking has a significant effect on Operational Efficiency (Cost Efficiency Ratio)

The results show that Mobile Banking has a negative and significant effect on the Cost Efficiency Ratio (CER). Because a lower CER indicates a more efficient condition, the result means that increased Mobile Banking transactions improve bank operational efficiency. Mobile Banking enables customers to conduct transactions independently, thereby reducing the service burden at branches, the use of physical documents, and manual transaction processing.

Nguyen and Nghiem (2022) found that digital transformation can improve bank efficiency and profitability through process automation and lower service costs. This result is also consistent with Abbasi, Alam, and Ismail (2021), who state that digital finance can improve firm productivity when technology is integrated into operational processes. From the Resource-Based View perspective, Mobile Banking can become a strategic resource when supported by adequate infrastructure, system security, data analytics capabilities, and human resources.

H4: The Cash Management System has a significant effect on Operational Efficiency (Cost Efficiency Ratio)

The Cash Management System was found to have a negative and significant effect on CER. This finding shows that increased CMS transactions can lower the cost-to-income ratio and improve operational efficiency. CMS enables corporate payments, receipts, accounts, transaction reporting, and liquidity to be managed through a single integrated platform. This automation reduces the need for manual transaction processing and verification.

This finding is consistent with Chen, Wu, and Yang (2023), who show that digital adoption in the corporate segment can improve bank efficiency. It also supports Nguyen and

Nghiem (2022), who explain that digital transformation can reduce operating costs through process simplification and greater productivity. Thus, although CMS requires relatively high development costs, high transaction volume can create economies of scale and reduce the average cost per transaction.

H5: Cost Efficiency has a significant effect on Financial Performance

The results show that CER has a negative and significant effect on ROA. This means that the higher the costs incurred relative to operating income, the lower the bank's ability to generate profit from its assets. Conversely, a decline in CER indicates a greater ability to control costs, thereby allowing profitability to increase.

This finding is consistent with Ozili (2020), who explains that cost efficiency is an important determinant of banking-sector profitability. It also accords with Farrell's (1957) efficiency concept, which states that an organization becomes more efficient when it can produce greater output with the same input or the same output at a lower cost. Therefore, controlling operating costs is an important mechanism for improving bank financial performance.

H6: Operational Efficiency (Cost Efficiency Ratio) can fully mediate the effect of Mobile Banking on Financial Performance

The test results show that CER mediates the effect of Mobile Banking on ROA. This finding indicates that Mobile Banking can improve financial performance through two pathways. The first is a direct effect through increased transaction activity and opportunities to earn fee-based income. The second is an indirect effect through lower service costs and improved process efficiency.

This finding supports Nguyen and Nghiem (2022), who state that digital transformation can improve bank profitability through greater efficiency. Abbasi, Alam, and Ismail (2021) also explain that digital technology has a stronger effect on performance when it creates changes in operational processes. From Barney's (1991) perspective, Mobile Banking becomes a source of competitive advantage when the technology is valuable, difficult to imitate, and integrated with organizational capabilities. Because the direct effect of Mobile Banking on ROA remains significant after CER is included in the model, this form of mediation is more appropriately described as partial rather than full mediation.

H7: Operational Efficiency (Cost Efficiency Ratio) can fully mediate the effect of the Cash Management System on Financial Performance

CER was also shown to mediate the effect of CMS on ROA. The results explain that although CMS has a negative direct effect on profitability, it can improve efficiency by

reducing CER. The subsequent reduction in CER benefits ROA because operating costs become better controlled.

This finding is consistent with Chen, Wu, and Yang (2023), who explain that the main benefits of digital adoption in the corporate segment may emerge through greater efficiency. Vial (2019) also emphasizes that the benefits of digital transformation do not always appear directly, but may be created through changes in organizational processes. This pattern may be described as competitive mediation because the direction of the direct effect of CMS on ROA differs from the direction of its indirect effect through CER. In the short term, system development and maintenance costs may suppress profit, while in the medium and long term, automation and transaction scale can improve efficiency and strengthen profitability.

Table 3. Summary of t-Test Results.

No.	Hypothesis	Direct Effect	Indirect Effect	Total Effect	<i>p</i> value	Result
H1	Mobile Banking → Financial Performance	0.2551	-	0.2551	0.007	Positive and Significant
H2	Cash Management System → Financial Performance	-0.0672	-	-0.0672	0.047	Negative and Significant
H3	Mobile Banking → Operational Efficiency	-0.263	-	-0.263	0.001	Negative and Significant
H4	Cash Management System → Operational Efficiency	-0.509	-	-0.509	<0.001	Negative and Significant
H5	Operational Efficiency → Financial Performance	-0.1007	-	-0.1007	0.005	Negative and Significant
H6	Mobile Banking → Financial Performance through Operational Efficiency	-0.0214	0.0968	0.0754	0.001	Positive and Significant
H7	Cash Management System → Financial Performance through Operational Efficiency	-0.0113	0.0999	0.0887	0.010	Positive and Significant

4. CONCLUSION

This study shows that digital transformation in state-owned banks does not automatically increase profitability; rather, its effect depends on the banks' ability to convert increased digital transactions into operational efficiency. Based on panel data analysis of BNI, BRI, and Bank Mandiri during 2020–2024, Mobile Banking has a positive and significant effect on Return on Assets (ROA), whereas the Cash Management System (CMS) has a negative and significant direct effect on ROA. Mobile Banking and CMS also have negative and significant effects on the Cost Efficiency Ratio (CER), meaning that higher transaction

volume through both digital channels contributes to improved cost efficiency. Furthermore, CER has a negative and significant effect on ROA; therefore, the lower the cost-to-income ratio, the greater the bank's ability to generate profit from its assets.

The mediation test shows that CER significantly mediates the effects of Mobile Banking and CMS on ROA. This finding confirms that operational efficiency is an important mechanism linking digital capabilities with bank financial performance. The main contribution of this study is therefore to provide evidence that the success of banking digitalization cannot be assessed solely from transaction-volume growth, but must also be evaluated based on the ability of digital services to reduce costs, improve process productivity, and generate sustainable economic value. This result extends the application of the Resource-Based View by showing that digital resources have a stronger effect on financial performance when integrated with cost-management and operational-process capabilities.

In practical terms, state-owned banks need to direct their digitalization strategies not only toward increasing the number of users and transaction volume, but also toward feature optimization, system stability and security, service monetization, increased fee-based income, and control of technology investment and maintenance costs. This study is limited to three state-owned banks and 60 observations during 2020–2024. Future research should therefore expand the research objects and observation period and consider other variables, such as fee-based income, the number of active digital users, third-party funds, Net Interest Margin, BOPO, credit quality, and macroeconomic conditions, to obtain a more comprehensive understanding of the relationship among digitalization, efficiency, and bank profitability.

RESEARCH LIMITATIONS

This study has several limitations that should be considered when interpreting its results. First, the research objects cover only three state-owned banks: PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Mandiri (Persero) Tbk, and PT Bank Negara Indonesia (Persero) Tbk. These banks were selected based on the availability of complete digital transaction data and financial statements during the study period. Consequently, the results cannot yet be generalized to represent all state-owned banks or the Indonesian banking industry as a whole.

Second, the study period is limited to 2020–2024, with 60 observation units. This period also includes the COVID-19 pandemic and the economic recovery phase; therefore, changes in digital transactions, operational efficiency, and bank financial performance may have been affected by the exceptional conditions of that period. The relatively limited number of

observations means that the regression results are more appropriately regarded as exploratory and should be interpreted cautiously.

Third, the measurement of digital transactions in this study uses only the transaction volumes of Mobile Banking and the Cash Management System. These indicators do not fully capture the success and quality of digital service implementation because they exclude the number of active users, transaction frequency, use of individual features, fee-based income, technology development costs, customer satisfaction, and the level of digital service adoption. In addition, financial performance is proxied only by Return on Assets, while operational efficiency is measured only by the Cost Efficiency Ratio.

Fourth, the study uses secondary data obtained from financial statements, annual reports, and official publications of the banks and related institutions. Consequently, the research depends on the completeness, consistency, and presentation methods used by each bank. The researchers could not directly verify the details of technology investment costs, transaction characteristics, customer usage levels, or the contribution of income specifically generated by Mobile Banking and the Cash Management System.

Fifth, the research model does not include other factors that may affect bank financial performance, such as third-party funds, Net Interest Margin, BOPO, fee-based income, credit quality, capital adequacy, bank size, interest rates, inflation, and economic growth. Therefore, the effects identified in this study cannot be regarded entirely as causal relationships because other omitted variables may also exert influence. Future research is expected to broaden the sample and observation period and add internal and macroeconomic variables so that the results are more robust and comprehensive.

REFERENCES

- Abbasi, A., Alam, A., & Ismail, S. (2021). Digital finance and firm performance: A literature review. *Journal of Financial Innovation*, 7(3), 1–15.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Chen, X., Wu, Y., & Yang, Z. (2023). Digital adoption and bank efficiency: Evidence from corporate segment. *Research in International Business and Finance*, 63, 101647.
- Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The Review of Economic Studies*, 51(3), 393–414. <https://doi.org/10.2307/2297430>
- Farrell, M. J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society: Series A (General)*, 120(3), 253–290. <https://doi.org/10.2307/2343100>

- Indrianti, S., Gamayuni, R. R., & Susilowati, R. Y. N. (2022). The effect of financial technology on banking financial performance. *Journal of Accounting and Investment*, 23(3), 213–228.
- Koch, T. W., & MacDonald, S. S. (2014). *Bank management* (8th ed.). Cengage Learning.
- Nguyen, T. T. H., & Nghiem, S. H. (2022). The impact of digital transformation on bank efficiency and profitability. *Research in International Business and Finance*, 61, 101647.
- Ozili, P. K. (2020). Banking sector profitability and cost efficiency. *Journal of Economics and Finance*, 44(2), 345–362.
- Siswati, S., Rahman, A., & Prasetyo, D. (2025). The effectiveness of digital banking on financial performance: A case study of PT Bank Mandiri (Persero) Tbk. *Journal of Finance and Banking*, 29(1), 15–28.
- Vial, G. (2019). Understanding digital transformation: A review and research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/MISQ/2013/37.2.03>
- Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review*, 14(1), 1–25. <https://doi.org/10.7551/mitpress/12085.003.0010>
- Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, 61(1), 35–46. <https://doi.org/10.1016/j.bushor.2017.09.003>
- Nicoletti, B. (2017). *The future of fintech: Integrating finance and technology in financial services*. Springer. <https://doi.org/10.1007/978-3-319-51415-4>