

The Role of Banking Digitalization in Improving Financial Performance

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ABSTRACT

This research aims to fill the gap in the existing literature and provides valuable information for banking practitioners and policy makers in understanding how digitalization affects the financial performance of banks in Indonesia. This study uses a comparative research method (difference test) with a quantitative approach. The data used are secondary data obtained from the banking Annual Reports of the last three years when the bank was still operating as a conventional bank, namely 2018 - 2020 with the last three years after the bank transformed into a fully digital bank, namely 2021 - 2023. The results of the study show that ROA, ROE, BOPO do not show significant differences after digitalization. However, NPL shows a significant difference after undergoing digitalization.

INTRODUCTION

In various sectors that exist in Indonesia today, the need for digitalization has become an important phenomenon that cannot be avoided, one of which is the financial sector (Kristianti & Tulenan, 2021). Banking is one of the financial sectors that is greatly influenced by the development of information and communication technology (Lantip, 2023). Banking digitalization, which initially started as an additional service to facilitate customer access, has now become a key strategy in responding to changes in consumer behavior and the dynamics of the financial industry (Kurniawan et al., 2021).

Compared to other countries, the condition of digital banking in Indonesia is still in the developing stage (Winasis, 2020). In developed countries such as the United States, Europe, and China, digital banks have become an integral part of the financial system (Ariyanto, 2011). The presence of digital banks such as N26 in Germany, Revolution the UK, and WeBank in China shows that this transformation is a global trend that is being rapidly adopted to meet the needs of a dynamic market (Ngamal & Maximus Ali Pejaka, 2021). Indonesia, while a bit behind, is now starting to show rapid growth in digital banking adoption, supported by a young, tech-savvy population (Mlambo et al., nd) and increasingly dependent on digital services (Hidayat, 2016).

Digitalization allows banks to provide faster, more efficient and tailored services to customers who increasingly want easy access. Banking processes that previously required customers to come to a branch office can now be completed online through a mobile application (Mawardi & Hasmawaty, 2021). In addition, digitalization also opens up opportunities for banks to reach wider market segments, including those previously untouched by traditional banking services. In addition, automation of operational processes through digitalization can significantly reduce operational costs (Setyaningrat et al., 2023). For example, the use of chat bots for customer service can reduce reliance on traditional call centers, which require large amounts of human resources (Dharmawan, 2018). With lower operating costs, banks can increase their profit margins, which ultimately has a positive impact on overall financial performance (Setyaningrat et al., 2023).

According to the Financial Services Authority Regulation (POJK) No. 12/POJK.03/2021 concerning Commercial Banks, digital banks in Indonesia must meet several criteria, including having a minimum core capital of IDR 10 trillion and adopting a business model that focuses on digital banking services. In accordance with these criteria, there are several banks that initially operated conventionally, but have now completely transformed into digital banks, such as Bank Jago, Bank Neo Commerce, SeaBank, Blu by BCA, and Allo Bank (Business News, 2024). These banks have successfully built a fully digital banking platform, offering easily accessible services without requiring a physical presence at a branch (Safitri et al., 2024). This transformation not only includes the use of technology in banking services, but also a total change in the bank's business and operational models that is inevitable to maintain the bank's competitiveness and relevance in the global market (Dharmawan, 2018).

In the context of this transformation, the Resource-Based Theory (RBT) approach provides the view that digitalization is a strategic resource utilized by banks to create competitive advantages (Dwi, 2019). By utilizing digital technology, banks can improve operational efficiency, reduce costs, and provide better services to customers, thereby creating sustainable added value (Dharmawan, 2018). This shows that digitalization not only has an impact on external parties such as improving customer experience, but also provides benefits to internal parties of the company through optimization of resources and capabilities (Simatupang, 2013).

Financial performance is the main indicator used to evaluate the health and success of a bank (Hasibuan et al., 2023). Calculation of financial performance is carried out to see to what extent the company has implemented financial implementation rules properly and correctly which are analyzed using financial analysis tools, so that it can be known about the good or bad financial condition of a company which reflects work performance in a certain period (Kristianti & Tulenan, 2021). This is very important so that resources are used optimally in facing environmental changes (Fahmi, 2011). The financial ratios used to measure financial performance include BOPO (Operating Expenses to Operating Income), ROE (Return on Equity), ROA (Return on Asset), and NPL (Non-Performing Loan) (Ma'ruf, 2021 and Christian & Pure, 2021)).

To date, there has been no research that specifically evaluates the role of banking digitalization in improving financial performance in Indonesia by comparing the financial performance of banks before and after transforming into fully digital banks. This research is important because it provides in-depth insights into the impact of digital transformation on aspects of bank financial performance, such as operational efficiency, profitability, and risk management. By conducting a comparative analysis between the periods before and after digitalization, this study aims to fill the gap in the existing literature and provide valuable information for banking practitioners and policy makers in understanding how digitalization affects the financial performance of banks in Indonesia. This article also aims to encourage other banks in Indonesia to follow in the footsteps of digital transformation, in order to maintain their competitiveness and relevance in an increasingly dynamic market. This article is also driven by the needs of the community, especially the millennial generation, who want the convenience of managing their finances without having to visit the bank in person. This generation is one of the main drivers in the adoption of digital banking services, because they prefer financial services that are flexible, fast, and easily accessible through digital devices. In addition, this article also aims to explore more deeply the role of banking digitalization in improving bank financial performance. Through this research, it is hoped that it can provide clearer insights into how digitalization can be a key driver in increasing efficiency, reducing operational costs, and expanding market reach.

LITERATURE REVIEW

Resource-Based Theory (RBT)

Resource Based Theory (RBT) is a theory that states that a company's competitive advantage comes from valuable, rare, difficult to imitate, and

irreplaceable (VRIN) internal resources. Companies with these resources can outperform their competitors. Resource-Based Theory (RBT) provides the view that digitalization is a strategic resource utilized by banks to create competitive advantage (Dwi, 2019). By utilizing digital technology, banks can increase operational efficiency, reduce costs, and provide better services to customers, thereby creating sustainable added value (Dharmawan, 2018). This shows that digitalization not only has an impact on external parties such as improving customer experience, but also benefits the company's internal parties through optimization of resources and capabilities (Simatupang, 2013).

Digital Banking

According to the Implementation of Digital Branches of General Banks by the Financial Services Authority (OJK), Digital banking services are banking services or activities using electronic or digital facilities owned by the Bank, through digital media owned by prospective customers and/or Bank customers, which are carried out independently. This allows prospective customers and/or Bank customers to obtain information, communicate, register, open accounts, conduct banking transactions, and close accounts, including obtaining other information and transactions outside of banking products, including financial advisory, investment, electronic trading system transactions (e-commerce), and other needs of Bank customers.

The main benefit of digitization is business efficiency, where digital platforms not only improve customer interactions and meet their needs faster, but also provide a method to make internal functions more efficient (Dias et al., 2012; Sharma, 2017). In addition, digitization contributes to cost savings. One of the main ways for banks to cut costs is through application automation that replaces redundant manual labor, as traditional banking processing is expensive, slow, and prone to human error (Dias et al., 2012). Digitization also provides banks with increased power by helping to manage marketing lists, allowing banks to reach a wider market and build closer relationships with tech-savvy consumers. Furthermore, greater agility is gained through the use of automation that can speed up external and internal processes, which in turn increases customer satisfaction. After the financial market crash of 2008, increased emphasis was placed on risk management. Instead of hiring and training risk management professionals, risk management software can detect and respond to market changes faster than even experienced professionals. Finally, digitization also offers increased security, where banks can leverage extra layers of security to protect their data from growing cyber threats, which could potentially damage their reputation. For example, in February 2016, the Internal Revenue Service announced that its systems had been hacked the previous year, as had several major technology companies.

Financial statements

At the end of each business, every company or institution prepares a financial report which is then reported to interested parties. According to Kasmir (2014:7), a financial report is a report that shows the company's financial condition at the present time or in a certain period. The purpose of a financial

report that shows the company's current financial condition is the current condition. The current condition of the company is the financial condition of the company on a certain date (for the balance sheet) and a certain period (for the income statement). The financial report describes the company's financial items obtained in a period. According to Kasmir (2014:10), in general, the financial report aims to provide financial information about a company, both at a certain time and a certain period. Clearly, the financial report is able to provide financial information to parties inside and outside the company who have an interest in the Company.

Profitability

According to Munawir, (2014:33) the definition of profitability is the ability of a company to generate profit during a certain period. The profitability of a company is measured by the company's success and ability to use its assets productively. Thus, the profitability of a company can be known by comparing the profit obtained in a period with the amount of assets or the amount of capital of the company. Measurement of profitability ratios can be done by comparing the various components in the income statement and/or balance sheet. Measurements can be done for several periods. The goal is to monitor and evaluate the level of development of the company's profitability over time (Hery, 2016:192).

Previous Research

Although there are many studies that discuss various aspects related to banking and financial technology, until now there has been no specific study on the role of banking digitalization in improving financial performance by comparing the financial performance of banks before and after they transformed into digital banks. Previous studies have touched on several relevant areas but have not directly examined the specific transition from conventional banks to digital banks. For example, (Kristianti & Tulenan, 2021) in their study entitled "The Impact of Financial Technology on Banking Financial Performance" focuses on the impact of fintech on banking financial performance. This study uses a descriptive qualitative approach and SPSS test tools to analyze financial ratios such as ROA, BOPO, and NPL, but does not compare bank performance in conventional and digital formats directly. The results of the study indicate that fintech provides opportunities for service development and improving banking financial performance, but does not explore the specific impact of changing business models to digital.

In addition, research by (Cupian & Akbar, 2020) which analyzes "Differences in Profitability Levels of Islamic Banking Before and After Collaborating with Financial Technology (Fintech) Companies" shows the impact of collaboration with fintech on the profitability of Islamic banking, but does not discuss the change from conventional to digital banks (Tiono & Djaddang, 2021) in their study "Comparative Analysis of Financial Performance in Conventional Banking Book IV in Indonesia Before and After the Covid-19 Pandemic" compared the financial performance of conventional banks during the pandemic, while (Siagian & Manzilati 2022) focused on comparing financial

performance before and after the implementation of mobile banking (Putri et al., 2021) conduct an analysis of the financial performance of the banking sector before and after the emergence of fintech companies.

While these studies provide useful insights into the impact of financial technology on bank performance, none of them specifically compares the financial performance of banks before and after they transformed from conventional banks to digital banks. This study will fill this gap by providing an in-depth analysis of how banking digitalization affects financial performance, as well as a comparison of performance between banks in conventional and digital formats. This will significantly contribute to the existing literature and help understand the concrete impact of digitalization on bank financial performance.

METHODOLOGY

This study uses a comparative method (difference test) with a quantitative approach. Descriptive research aims to provide an accurate picture of the characteristics of the object or phenomenon being studied, while the quantitative approach is used to analyze numerical data objectively and measurably.

The research population includes all banks registered with the OJK, while the research sample was taken from banks that have fully transformed into digital banks according to the criteria set by the Financial Services Authority (OJK). These criteria refer to OJK Regulation No. 12/POJK.03/2021, which requires digital banks to have minimum core capital and focus on digital technology-based banking services. The list of digital banks according to OJK criteria is Bank Jago, Bank Neo Commerce, SeaBank, Blu by BCA, and Allo Bank.

The data collection technique is carried out by comparing the financial performance of banks before and after transforming into digital banks. The data used is secondary data obtained from the bank's annual report which is officially published. The analysis tool used is SPSS 25 software by conducting the Mann-Whitney test and the Wilcoxon test to test the difference in financial performance between the period when the bank was still operating as a conventional bank and the period after becoming a digital bank.

Financial performance is measured using several main indicators, namely Return on Assets (ROA), Return on Equity (ROE), Operating Expenses to Operating Income (BOPO), and Non-Performing Loans (NPL). The analysis was carried out by comparing financial performance data from the last three years when the bank was still operating as a conventional bank, namely 2018 - 2020 with the last three years after the bank transformed into a fully digital bank, namely 2021 - 2023. The difference in the results of this analysis will be used to prove the role of digitalization in banking performance in Indonesia, as well as to evaluate whether digital transformation has a positive impact on the bank's operational efficiency and profitability.

RESEARCH RESULTS

The first step in determining the data processing method is to conduct a normality test to assess whether the data is normally distributed or not. If the data is normally distributed, the test results will show a significance value (sig) greater than 0.05, while if the data is not normally distributed, the significance value will be less than 0.05.

Table 1. Tests of Normality of Overall Data

	Kolmogorov-Smirnova			Shapiro Wilk		
	Statistics	Df	Sig.	Statistics	Df	Sig.
3 years before becoming a digital bank	.344	60	.000	.734	60	.000
3 years after becoming a digital bank	.278	60	.000	.793	60	.000

The results of the normality test in Table 1 show that the data is not normally distributed, indicated by a significance value of 0.000 which is much smaller than the threshold of 0.05. This condition indicates an imbalance in the data distribution, such as the presence of outliers or a tendency towards significant skewness, which causes the data distribution not to meet the normality assumption. Therefore, to avoid bias in the analysis results, non-parametric tests were chosen, namely the Mann-Whitney test and the Wilcoxon test, which are more suitable for data that is not normally distributed. Both of these tests are able to provide more accurate and relevant results in data conditions like this, so that the analysis remains valid even though the normality assumption is not met. The following are the results of the analysis using the Mann-Whitney test and the Wilcoxon test:

Table 2. Mann-Whitney ROA test results before and after digital

Whitney	Mann-Whitney samples statistics		Mann	
	Mean		z	Sig (2-tailed)
ROA				
3 years before digital	14.27		-0.776	0.438
3 years after digital	16.73			

Based on Table 1, the results of the Mann-Whitney statistical test show a value of -0.776 with a significance of 0.438 which is greater than the significance limit of 0.05. This indicates that there is no significant difference in Return on Assets (ROA) before and after the bank transformed into a digital bank. This conclusion shows that the transformation process to a digital bank does not directly have a significant impact on financial performance, especially on the ROA aspect.

However, if viewed from the average value (mean), there is an increase in ROA after digitalization, which is 16.73 compared to before digitalization which was only 14.27. This indicates that although the direct impact of digitalization on ROA is not statistically significant, digital banking shows effectiveness in better asset management to generate profits. This increase in

performance can be attributed to several key factors in the digital transformation of banking. First, digitalization allows banking services to be more accessible to customers without geographical limitations, which in turn increases the bank's market share and revenue. Second, digitalization helps banks to reduce operational costs, especially in terms of maintaining physical infrastructure which is decreasing due to automation and shifting to technology-based services. Third, a more effective and targeted digital marketing strategy helps banks attract more new customers and retain existing customers. All of these factors contribute to the increase in profits achieved by banks after the transformation into digital banks.

Thus, although digital transformation may not show a significant immediate impact on some financial performance indicators such as ROA, digitalization still provides long-term benefits for banks, especially in terms of operational efficiency and broader business expansion.

Table 3. Mann-Whitney ROE test results before and after digital

Whitney	Mann-Whitney samples statistics		Mann	
	Mean		z	Sig (2-tailed)
ROE				
3 years before digital	14.17		-0.831	0.406
3 years after digital	16.83			

Based on the research results in Table 2, it was found that the statistical test using the Mann-Whitney method produced a z value of -0.831 with a significance value (sig.) Of 0.406. This significance value is greater than the standard significance limit of 0.05, which indicates that there is no statistically significant difference between Return on Equity (ROE) before and after conventional banks transformed into digital banks. This means that from a statistical point of view, the transformation of banks from conventional to digital does not have a significant measurable impact on ROE.

However, although there is no statistically significant difference, when viewed from the average (mean) ROE value, there is an increase after the bank transformed into digital. The mean ROE value after the transformation was recorded at 16.83, greater than the mean value before the transformation, which was 14.17. This increase indicates that although the difference is not statistically significant, the bank's transformation into digital has provided a positive boost to the bank's ability to generate profits from its own capital.

This increase in ROE can be caused by several factors related to banking digitalization. Digital transformation allows banks to optimize their operations and services through the use of advanced technology, which allows them to reach more customers, reduce operational costs, and increase efficiency in asset management. With more flexible services and wider reach, digital banks are also able to increase revenue from various digital financial products and services offered to customers. In this context, although the results of the statistical test did not show a significant difference in ROE, the increase in the

average value indicates that digital transformation still has a positive impact on bank performance. Therefore, although it cannot be concluded that digitalization directly and significantly increases ROE, the results of this study still indicate that digitalization contributes to the efficiency and financial growth of banks in the long term.

Table 4. Results of the Mann-Whitney BOPO test before and after digital

Whitney	Mann-Whitney samples statistics		Mann	
	Mean		z	Sig (2-tailed)
BOPO				
3 years before digital	16.43		-0.581	0.561
3 years after digital	14.57			

The Mann-Whitney test results shown in Table 3 show a z value of -0.581 with a significance value of 0.561, which is greater than the significance limit of 0.05. This means that statistically, there is no significant difference between the BOPO ratio before and after the bank carried out digital transformation. The BOPO ratio is one of the important indicators for measuring the efficiency of banking operations. The smaller the BOPO ratio, the more efficient the company is in managing its operating expenses to generate income. Therefore, a smaller BOPO ratio is considered better, because it shows that the bank has succeeded in controlling its operating costs, so that more income can be optimized into profit.

In facing the digitalization phenomenon, banks are paying serious attention to investment in information technology. However, it is important for banks to maintain a balance in spending on this technology, so that there is no over-investment that would burden bank operations. This is reflected in the results of the study which showed that after digitalization, the mean BOPO ratio decreased from 16.43 before digitalization to 14.57 after digitalization. This decrease shows that banks have succeeded in increasing their operational efficiency after switching to digital, while maintaining operational costs so that they do not soar. Digitalization is expected to be one of the main drivers in increasing banking revenue. By expanding access and services through digital technology, banks have a greater opportunity to reach more customers, offer new products and services, and improve service quality. Therefore, the income generated from various digital innovations and efficiencies is expected to be greater than the costs incurred for technology development and maintenance.

The results of this study indicate that, although there is no statistically significant difference in the BOPO ratio, digital transformation still has a positive impact on improving bank operational efficiency, which ultimately contributes to improving overall financial performance. In other words, digitalization not only offers significant growth opportunities, but also allows banks to improve their efficiency and competitiveness in an increasingly competitive financial industry.

Table 5. Results of the Wilcoxon NPL test before and after digital

	Wilcoxon sample statistics		Wilcoxon	
		Mean	z	Sig (2-tailed)
NPL				
3 years before digital	4.00			
3 years after digital	7.33		-2.121	0.034

The results of data testing for Non-Performing Loans (NPL) before and after digitalization, as shown in Table 4 through the Wilcoxon test, show a z value of -2.121 with a significance value of 0.034, which is smaller than the significance threshold of 0.05. This shows that there is a significant difference between NPL before digitalization and NPL after digitalization. In other words, the transformation from a conventional bank to a digital bank has had a significant impact on the NPL ratio.

From the results of this analysis, it can also be seen that the average (mean) NPL value after the bank transformed into a digital bank increased. The mean NPL value after digitalization was recorded at 7.33, higher than the average NPL value before digitalization which was 4.00. This increase in NPL shows that after the bank switched to digital, there was an increase in the number of non-performing loans or loans that were not paid by debtors. This can be indicated as a decrease in the ability of debtors to meet their credit obligations after digitalization. One factor that can explain the increase in NPL after digitalization is changes in the credit risk management process.

Digitalization brings major changes in the way banks provide services, including in terms of providing credit. Digital banking systems are usually supported by technology that allows for greater transparency and access to information, as well as ease in the credit process. With sophisticated technology, digital banks are easier to predict and manage credit risk, thereby reducing the potential for NPLs. However, although digital technology offers ease and transparency in credit risk management, an increase in NPLs can occur if credit policies are not updated or inadequate.

DISCUSSION

Based on the results of the research conducted, there are a number of important findings related to the impact of banking digitalization on financial performance, which provide significant contributions both from a practical and academic perspective. In particular, this study highlights several key financial ratios, such as Return on Assets (ROA), Return on Equity (ROE), Operating Expense to Operating Income (BOPO) ratio, and Non-Performing Loan (NPL), which are analyzed before and after digital transformation.

The results of the Mann-Whitney statistical test show that there is no statistically significant difference in ROA before and after the bank digitized, with a z value of -0.776 and a significance of 0.438 which is greater than the significance limit of 0.05. Using Resource Based Theory (RBT), this finding indicates that the transformation from a conventional bank to a digital bank does not directly have a significant impact on the bank's ability to manage

assets to generate profits. However, when viewed from the average value (mean), there was an increase in ROA after digitization, which was 16.73 compared to 14.27 before digitization. This suggests that although the impact is not yet statistically significant, digitization has the potential to improve asset management in the long term, with better operational effectiveness thanks to the application of more sophisticated technology. The results of this study are in line with research conducted by (Devi et al., 2017) which uses Resource Based Theory (RBT) revealed that there was no significant difference in ROA value after digitalization. And also in line with research conducted by (Kristianti & Tulenan, 2021) and (Putri et al., 2021) revealed that ROA before and after fintech entered Indonesia did not have a significant impact on asset management, which could result in decreased profitability when implementing fintech. However, the results of this study are not in line with research conducted by (Supriatin & Aulia, 2022) and (Bakkara & Sihotang, 2024) as well as (Purwanto & Perkasa, 2024) which reveals that the ROA of banking digitalization has a positive (significant) influence, which means that the bank's ability after digitalization to manage assets to generate profits is better.

In the ROE ratio, the results of the Mann-Whitney statistical test also showed no significant difference between ROE before and after digitalization, with a z value of -0.831 and a significance of 0.406 which is greater than the significance limit of 0.05. By using Resource Based Theory (RBT) although statistically the difference is not significant, the average ROE value after digitalization increased to 16.83 compared to 14.17 before digitalization. This shows that digital transformation, although not immediately statistically significant, provides a positive boost to the bank's ability to generate profits from the capital it has. This could be due to increased operational efficiency after digitalization, which allows banks to optimize the use of capital. The results of this study are in line with research conducted by (Nurul Azmi & Yuni Yuniawati, 2022) and (Treasure & Dedi Suselo, 2022) which revealed that ROE in banking digitalization does not have a significant effect. However, the results of this study are not in line with the research conducted by (Nurul Fadhilah & Darmawati, 2023) and (Bakkara & Sihotang, 2024) which reveals that banking digitalization has a significant influence on ROE, meaning that banking digitalization is able to drive operational efficiency which can increase profits.

The BOPO ratio, which is used to measure the operational efficiency of banks, also showed no significant difference between the periods before and after digitalization. Using Resource Based Theory (RBT), the statistical test showed a z value of -0.581 and a significance of 0.561, which is greater than the significance limit of 0.05. This means that digital transformation does not have a statistically significant impact on the operational efficiency of banks. However, from the lower average BOPO value after digitalization, it can be concluded that there have been successful efforts made by banks to increase efficiency in managing operational expenses, although it is not yet statistically significant enough. The lower the BOPO ratio, the better the bank's efficiency in managing its operational expenses to generate income, so that digital banks appear to be successful in reducing operational costs and increasing efficiency after

transformation. The results of this study are in line with research conducted by (Kristianti & Tulenan, 2021) and (Supriatin & Aulia, 2022) which revealed that there was no difference in BOPO before and after fintech (not significant) this indicates that banking efficiency in managing operational costs after fintech has decreased. However, the results of this study are not in line with the research conducted by (Ma'ruf, 2021) and (Nurul Fadhilah & Darmawati, 2023) as well as (Purwanto & Perkasa, 2024) which reveals that banking BOPO after digitalization has a significant impact.

On the other hand, the Non-Performing Loan (NPL) ratio, which measures the quality of credit provided by banks, using Resource Based Theory (RBT) showed a significant difference after digitalization. The Wilcoxon test showed a z value of -2.121 with a significance of 0.034, which is smaller than the significance limit of 0.05. These results indicate that digitalization significantly affects the NPL ratio, which increased from an average value of 4.00 before digitalization to 7.33 after digitalization. This increase in NPL indicates that, although digital technology should be able to help predict and manage credit risk, it is possible that the implementation of digitalization has not been fully integrated with an effective risk management system. The increase in the number of non-performing loans after digital transformation may be caused by changes in the credit granting process that have not been fully adjusted to the use of digital technology, or the inability of customers to adjust to new credit policies that are implemented digitally. The results of this study are in line with research conducted by (Kristianti & Tulenan, 2021) and (Ariyanto, 2011) which revealed that NPL before and after fintech entered Indonesia had a significant impact, this means that the banking NPL value has increased, indicating a decrease in the debtor's ability to pay credit, which can result in decreased profitability. However, the results of this study are not in line with research conducted by (Tiono & Djaddang, 2021) and (Primary, 2021) which reveals that NPL has a negative (insignificant) influence, which means that banking is able to increase the debtor's ability to pay credit so that its profitability increases.

Overall, the findings of this study indicate that banking digitalization, although providing a positive boost to efficiency and profitability, has not shown a statistically significant measurable impact on several key financial ratios such as ROA, ROE, and BOPO in the short term. However, the increase in the average value of these ratios indicates the long-term potential for banks to be more efficient and productive after digitalization. On the other hand, the significant increase in the NPL ratio emphasizes the need for improvements in credit risk management strategies after digitalization, which must be balanced with tighter credit policies and more sophisticated risk monitoring systems. Thus, these findings provide important implications for both practitioners and academics. Banks need to continue to develop risk management systems that are integrated with digital technology and adjust their operational strategies to maximize the benefits of digital transformation.

CONCLUSION AND RECOMMENDATIONS

Based on the results of research on the role of banking digitalization in improving financial performance, it can be concluded that the transformation of conventional banks into digital banks has varying impacts. In the Return on Assets (ROA) and Operating Expenses to Operating Income (BOPO) ratios, although there is no statistically significant difference, the average value shows an increase in efficiency after digitalization, which reflects the bank's ability to manage its assets and operations better. Meanwhile, in the Return on Equity (ROE) ratio, the results of statistical tests also did not show a significant difference, although there was an increase in the average value after digitalization. This indicates that digitalization has the potential to increase the profitability of equity owned, although the impact has not been statistically significant. However, in the Non-Performing Loan (NPL) ratio, there was a significant difference after digitalization, with an increase in NPL. This shows that although digital technology makes it easier to predict credit risk, credit risk still increases if credit policies are not adjusted to the digital system.

This study has significant theoretical and practical impacts. From a practical perspective, this study can help banks design more effective digitalization policies, especially in terms of increasing operational efficiency and credit risk management, as well as serve as a guide for management in adjusting their digital strategies. Academically, this study can serve as a basis for further research exploring the relationship between banking digitalization and financial performance, as well as enriching the literature on digital transformation and risk management in the banking sector.

ADVANCED RESEARCH

This study has limitations, namely the sample in this study is limited to banks that have fully switched to digital, so it does not include conventional banks that are in the process of digitalization. For further research, it is recommended that the scope of the research time be expanded to observe the long-term impact of digitalization on banking financial performance. Future research should also consider external factors such as regulations and economic conditions that affect banking. In addition, further exploration of non-financial aspects such as customer experience, data security, and digital service innovation can provide more comprehensive insights into the effectiveness of digitalization. Research on banks that are in the process of digitalization is also important to understand the challenges and transition strategies more deeply.

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