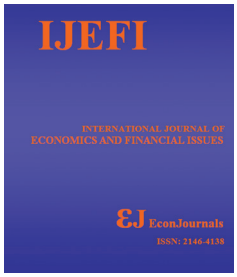

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Financial Performance of Banking in Indonesia: A Comparison Before and During the Covid-19 Pandemic

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ABSTRACT

This research aims to examine the financial performance of the banking sector in Indonesia both before and during the pandemic. In the course of this investigation, financial performance was evaluated using several factors namely Loan to deposit ratio (LDR), non-performing loan (NPL), return on assets (ROA), as well as operating expenses and operating income (BOPO). Furthermore, the data used comprised information on the banking financial conditions before (2018-2019) and during the pandemic-affected periods (2020-2021). Purposive sampling was used for sample selection and the analytical methodology adopted comprised the Wilcoxon signed rank test and paired samples t-test analysis. It is also crucial to establish that the present research utilized statistical computations conducted via the Statistical Package for the Social Sciences (SPSS) application, with a significance level of 5%. The obtained results showed that no significant difference was identified between LDR and BOPO both before and during the pandemic. However, a substantial difference was identified between NPL and ROA over the two examined periods.

Keywords: Banking Sector, COVID-19 Pandemic, Financial Performance, Financial Ratio, Indonesia
JEL Classification: G21, L25, M21

1. INTRODUCTION

The COVID-19 pandemic is considered a pervasive issue in Indonesia primarily because it disrupted various aspects of Indonesian society and hindered activities across the board. This pandemic signifies the international dissemination of the 2019 coronavirus disease (COVID-19). According to previous observations, the disease originated from a novel strain of coronavirus known as SARS-CoV-2, which precipitated its spread across the world. Accordingly, the outbreak was first detected in Wuhan City, Hubei Province, China, and the resulting impact was an unprecedented economic disruption in modern times. This adverse impact was significantly evidenced by the decline in Real GDP of the United States and Europe in the first half of 2020, which was 11% and 15%, respectively, marking the largest decline since World War II (Devi et al., 2020). Similarly, Albuquerque et al. (2020) identified an unprecedented impact of the COVID-19 pandemic on the global stock market. This finding was supported by the observation that the United States stock market underwent a significant 30% downturn within a mere month following the outbreak. It is also important to acknowledge that as a result of the pandemic, the majority of countries subsequently entered into a state of economic recession, including Indonesia. In 2020, the national economy experienced a decline of approximately 5.32%, 3.49%, 0.42% and 2.07% on the second, third, and fourth quarter as well as on the annual basis, respectively. Furthermore, according to Ilhami and Thamrin (2021), the repercussions of the COVID-19 pandemic transcend the realm of the health sector. The disease was observed to significantly affect diverse industries, including the banking sector. As observed by previous research, this global crisis has significantly challenged the banking sector by potentially engendering issues within the broader business landscape and significantly impacting its entire stability (Ilhami and Thamrin, 2021). These occurrences are plausible considering the fact that the sector functions as an intermediary institution facilitating the investment funding requirements of the business world.

The banking sector operates as a service-oriented entity that provides financial services to the general public. As per the provisions outlined in Law Number 7 of 1998, banks are considered business entities tasked with gathering public funds through savings and subsequently disbursing these funds back to the public in the form of credit and other financial instruments, primarily aimed at enhancing the living standard of many people. Considering this intermediation function, the banking sector is highly relied upon by various countries to help create financial system stability. In Indonesia, the banking sector was observed to face several challenges during the COVID-19 pandemic. These challenges must be addressed for the sector to experience continuous growth and development. One of the strategies to solve these associated problems is by maintaining the sector's financial performance. During the pandemic, Indonesian banks faced several potential risks, such as credit, market, and liquidity risks, all exerting an impact on the sector's financial performance. Accordingly, this research is crucial because it facilitates the effective mapping of these potential risks and enables the formulation of anticipatory strategies and comprehensive management within the banking sector.

Loans represent the most significant productive assets for banks, yielding the largest interest income. However, these assets are also associated with substantial potential risks. In the banking domain, the term non-performing loan (NPL) is a crucial metric. This metric is used to assess the capacity of banks to accurately handle the risks associated with the failure of debtors to repay loans (Sari and Zaenuddin, 2023). Based on observations, financial institutions with high NPL levels are at greater risk of experiencing losses when providing loans. In this regard, banks participating in the provision of loans have been found to inherently bear risks, particularly concerning the issue of irregular or non-smooth credit repayments that can significantly impact their performance. According to previous research, a high NPL will automatically result in the attainment of low profitability (Hanaffy, 2023). This result was supported by the observation of Ameur and Mhiri, (2013), who stated that an increase in NPL will cause the return on assets (ROA) to be smaller. Accordingly, the observation is plausible because an increase in bad loans will practically reduce the income of banks, eventually leading to decreased profits (Ameur and Mhiri, 2013; Banani and Sunarko, 2022; Sapiri and Putra, 2023). Another crucial metric used in the banking sector is LDR (loan to deposit ratio). LDR denotes a liquidity ratio measurement tool employed to determine the capability of banks to meet depositor fund withdrawals by relying on credit as a liquidity source (Dendawijaya, 2009). Furthermore, the metric shows the capabilities of banks to process the deposited third-party funds. Based on this understanding, it is important to acknowledge that the LDR size of a financial institution will affect its entire profitability. This is because the greater the amount of funds paid to customers in the form of loans, the fewer unused funds available, and the higher the interest income earned.

As previously stated, all industrial sectors, specifically companies operating in the financial sector, including banks have been significantly and adversely influenced by the COVID-19 pandemic. In the domain of financial institutions, banks are a benchmark for other industries, thereby serving as an important sub-sector. Some research has been conducted to examine the impact of the COVID-19 pandemic on this sector. These investigations showed different results such as a substantial decline in average industry margins, increased NPL, reduced interest income, and a decline in capital adequacy ratio (CAR) (Barua and Barua, 2021), and an improvement in the performance of shares categorized under environmental, social, and governance (ESG) criteria (Broadstock et al., 2021). In accordance with this, Lelissa (2020) showed the impact of the global crisis on the balance sheet as well as the profit and loss of banks while Siregar (2020) reported a 0.79% decline in JCI and a 1.22% decrease in LQ45, and a 0.14% rise in JI. Still considering the impact of the pandemic, Riftiasari and Sugiarti (2020) researched conventional BCA and BCA Syariah and found that ROA, CAR, and LDR (loan-to-deposit ratio) were significantly different, while Operating expenses and operating income (BOPO) as well as NPL had no substantial difference compared to the period before COVID-19. Following this, Devi et al. (2020) observed a rise in short-term activity and leverage ratios, coupled with a decrease in profitability and liquidity ratios among public companies amid the pandemic. Furthermore, Silaban and Kristia (2021) discovered that banking performance was adversely impacted by the COVID-19 outbreak and this observation was further supported by the occurrence of credit crunch and NPL. Similarly, Anggraini et al. (2021) affirmed that the pandemic had a notable effect on diminishing the performance of conventional banks, particularly in terms of average ROA, LDR, and CAR. However, there was no substantial difference in the performance of BOPO and NPL ratios both before and during the pandemic.

Pramitasari and Subaida (2022) conducted research on State-Owned Enterprises (SOEs) banks including Bank Mandiri (Persero) Tbk., Bank Tabungan Negara (Persero) Tbk, Bank Rakyat Indonesia (Persero) Tbk, and Bank Negara Indonesia (Persero) Tbk. The investigation revealed notable discrepancies in financial ratios, including BOPO, ROA, LDR, and CAR between periods before and after the onset of the COVID-19 pandemic. It was also observed from the research that metrics such as NPL and NIM had no significant differences. This result is in line with Melinda and Nurasik (2021), which conducted comprehensive research on 4 state-owned banks, showing disparities in ROA and ROE (return on equity) in banking companies before and after the declaration of the pandemic. Melinda and Nurasik also showed a variance in net profit margin (NPM) during this period, while NPL exhibited no noteworthy difference in banking companies before and after the declaration of the pandemic. This result contrasts with Ratri et al. (2022), which showed that during the pandemic, indicators such as CAR, NPL, and NPM experienced an increase than the pre-pandemic period. Nevertheless, other indicators, such as LDR and ROA values, exhibited a decline during the pandemic compared to the period preceding it. According to observations by Fujianti et al. (2022), there was no noteworthy disparity in the financial performance of manufacturing companies concerning leverage and liquidity both before and during the pandemic. It is crucial to note that, in relation to profitability, the financial performance of the examined companies was observed to undergo an average decline. This research seeks to investigate the impact of liquidity performance (particularly NPL), Profitability

performance (specifically ROA), and BOPO performance in Banking Companies recorded on the Indonesian Stock Exchange both before and during the pandemic.

2. THEORETICAL FOUNDATIONS AND HYPOTHESES DEVELOPMENT

2.1. Theoretical Foundations

2.1.1. Definition of financial ratios

Financial ratios are analytical tools used to elucidate specific relationships between the elements in a financial report. These ratios involve the comparison of figures in financial reports through the division of one figure by another, facilitating a thorough evaluation of financial performance and relationships (Kasmir, 2021). It is important to establish that comparisons within financial reports can occur either between individual components or among various components. These comparisons include the process of assessing numbers from a single period or multiple periods. Accordingly, financial ratios, which are typically derived from the comparison, represent numerical indicators that signify relevant and significant relationships between different items in financial reports (Kasmir, 2021). As previously stated, comparisons, in this situation, can be drawn either between individual financial report items or among various items in the report. Multiple financial ratios can be used to effectively gauge the financial performance of companies, each serving a specific purpose and carrying unique significance. However, it is crucial to clarify that the ratios are only meaningful for decision-making purposes when the outcomes are interpreted. In the banking sector, key financial ratios include LDR, NPL, Solvency, and Profitability, all of which serve as important metrics.

2.1.2. Types of financial ratios

Liquidity analysis holds substantial significance, specifically because it is a metric that can be used to accurately measure the success rate of companies by gauging their capabilities to meet current obligations effectively. LDR is a common liquidity metric used to evaluate banking performance. This ratio evaluates the capacity of banks to fulfill short-term obligations through the division of total credit by total third-party funds (Septiani and Lestari, 2016). When banks efficiently allocates credit, LDR tends to increase, signifying that the total distributed credit surpasses the rise in total third-party funds, potentially resulting in increased bank profits and an improvement in ROA (Rahma and Sutrisno, 2023). Meanwhile, an excessively high LDR suggests diminished liquidity capacity for the concerned bank. This situation arises due to the increased magnitude of funds required to finance credit. It is also important to comprehend that a low LDR shows a limited level of credit expansion in comparison to the received funds (Soesetio et al., 2022).

Companies' profitability can be evaluated through various methods, depending on the comparison of profits with assets or capital. As rightly stated by Kasmir (2021), the ratio employed to evaluate companies' capability to generate profits or returns within a specific period is referred to as the profitability ratio (Kasmir, 2021). Additionally, this ratio is an indicator of the effectiveness of companies' management, often reflected in the profits derived from investment income or sales. In this research, the profitability ratio measure uses ROA, a ratio that shows the returns being generated from the number of assets owned by companies (Kasmir, 2021).

Operating expenses and operating income (BOPO) ratio represents the ability of banks to manage assets and handle risks (Putera, 2020). In connection with the COVID-19 pandemic, many people suspected that the BOPO ratio of Indonesian banks would increase. However, research conducted by Sutrisno et al. (2020) showed that, overall, only Islamic banks were able to sustain controlled efficiency. It is important to comprehend that while BOPO is an indicator of the size of the efficiency of banks, a higher BOPO corresponds to lower profitability. This metric is also a profitability ratio that compares operating expenses to operating income. Typically, greater operating expenses signify poor company management, which means companies with high BOPO tend to be less effective and could potentially experience losses. Meanwhile, a lesser BOPO ratio reflects effective company management, and this provides companies with the potential to gain greater profits (Riftiasari and Sugiarti, 2020).

Non-performing loan (NPL) refers to problematic situations where debtors are unable to meet both loan arrears and interest payments in the period agreed upon. The comprehensive definition of NPL is detailed in the Financial Accounting Standard No. 31 (revised 2022). This standard defines NPLs as credits where the repayment of principal or interest installments has exceeded 90 days from the due date or when there is significant doubt regarding timely payments. Accordingly, the term "problematic credit" describes a situation where the loan agreement is at risk of failure. Considering this situation, it is important to avoid the assumption that credit issues solely emanate from customer fault. Problematic credit can originate from various factors, including customer circumstances, internal conditions, and the credit provision itself. As stated in previous research, when NPL reaches substantial levels, adverse consequences can occur under certain conditions (Septiari and Mazlifani, 2018). This type of loans have been observed to significantly and adversely affect aspects such as revenue, profits, capital adequacy, and the entire assessment of banks in terms of function and public trust, with issues arising from both internal and external factors in banks (Riani, 2021).

2.2. Hypothesis Development

2.2.1. Liquidity before and during the COVID-19 pandemic

Liquidity typically assesses companies' capacity to effectively settle obligations, specifically short-term debts. In the case of banks, Liquidity, represented by LDR, measures the capability to perform intermediary functions. Taking into account that credit distribution stands as a key banking activity, Bank Indonesia oversees LDR within the range of 78-92%. This directive has been observed to significantly impact the credit distribution capacity of banks resident in Indonesia. It is crucial to recognize that the COVID-19 pandemic caused a substantial decrease in LDR. This observation was confirmed by Sutrisno et al. (2020), Riftiasari and Sugiarti (2020), as well as Ilhami and Thamrin (2021), where there were no substantial differences between the periods before and

during the pandemic. Given this context, the hypothesis concerning LDR is proposed as follows:

H01: The banking sector experienced no difference in liquidity (LDR) both before and during the COVID-19 pandemic

Ha1: There is a difference in liquidity (LDR) in banking before and during the COVID-19 pandemic.

2.2.2. Profitability before and during the COVID-19 pandemic

Profitability serves as a metric to gauge the level of profit companies can generate within a specific timeframe. In the context of this research, ROA was selected as the preferred profitability measure. This measure was selected primarily because it offers insights into the effectiveness of companies by considering asset use and sales profitability. For investors, ROA functions as an indicator aiding investment decisions in the capital market when selecting companies to invest in. In examining the impact of the COVID-19 pandemic on this metric, Rababah et al. (2020), Fitriani (2020), as well as Azizah et al. (2020) revealed a noteworthy difference in ROA during the pandemic. Therefore, considering ROA, the hypotheses were proposed as follows:

H02: There is no difference in ROA within banks before and during the COVID-19 pandemic

Ha2: There is a difference in ROA within banks before and during the COVID-19 pandemic.

2.2.3. Operating expenses and operating income (BOPO) before and during the covid-19 pandemic

BOPO, an efficiency indicator for banks, showed an inverse relationship between higher BOPO and reduced profitability (Sutrisno et al., 2020). It primarily measures operational income coverage for operating expenses (Riftiasari and Sugiarti, 2020), reflecting the asset management and risk-handling capabilities of banks (Putera, 2020). With a specific focus on operating expenses and income related to core banking activities such as fund collection and credit distribution (Riani, 2021), BOPO can be influenced by the quality of NPLs. This observation was supported by the results of Fitriani (2020) and Surya and Asiyah (2020) where it was confirmed that there were significant differences in BOPO within state-owned Sharia banks amid the COVID-19 pandemic. Considering this factor, the subsequent hypotheses were developed:

H03: The banking sector experienced no difference in BOPO before and during the COVID-19 pandemic

Ha3: The banking sector experienced a difference in BOPO during the COVID-19 pandemic.

2.2.4. Non-performing loan (NPL) before and during the COVID-19 pandemic

NPL functions as a vital financial ratio, providing essential insights into the evaluation of banks' credit quality (Bank Indonesia, 2005 and Kang and Kang, 2009). Based on observation, elevated NPL tends to reflect poor bank credit quality or increased credit risk. This scenario adversely impacts the profitability of banks, leading to reduced investor confidence due to declining profit-sharing prospects. Accordingly, despite NPL fluctuations, it was found in the present research that the share prices remained unaffected, indicating that investors do not make use of NPL as a primary benchmark for bank performance analysis. Furthermore, the indifference to influencing share prices might be a result of the fact that investors prefer the use of other ratios as benchmarks, such as CAR and ROA, which offer a more comprehensive understanding of bank capital adequacy and asset-driven profitability. Barua and Barua (2021), Fitriani (2020), as well as Surya and Asiyah (2020) demonstrated that NPL increased during the COVID-19 pandemic, causing decreased income and a decline in CAR. However, according to Sutrisno et al. (2020), and Ilhami and Thamrin (2021), no significant differences were observed in NPL in Islamic banks in Indonesia before and during the pandemic. This observation aligns with the operational structure of Islamic banks, which adhere to a profit-sharing system. Considering NPL, the following hypothesis were formulated in this research:

H04: There is no difference of NPL within banks before and during the COVID-19 pandemic

Ha4: There is a difference of NPL within banks before and during the COVID-19 pandemic.

3. RESEARCH METHODS

3.1. Research Design

This research was performed focusing on the financial ratios extracted from the annual financial reports of banking companies recorded on the Indonesian Stock Exchange. Using a quantitative methodology and a comparative approach, it compared variables across different samples or at different time points. Accordingly, the investigation was limited to a 4-year data collection period, a 4-year data collection period, distinguishing between 2018 and 2019 as the periods before and during the COVID-19 pandemic, and 2020-2021 as the timeframe corresponding to the pandemic era. The Wilcoxon Signed Rank Test and Paired samples t-test analysis were employed in this research with the primary aim of comparing differences between two means from paired samples, and the assumption that the used data was normally distributed.

3.2. Research Population and Sample

In research, a population represents a collective set of objects or subjects possessing specific identifiable qualities and characteristics capable of being studied, and from which conclusions can be drawn (Sugiyono, 2021). The population for this research comprises banking companies recorded on the Indonesian Stock Exchange from 2019 to 2021. During this period, 46 banking companies were identified on the Indonesian Stock Exchange, comprising the entire population under consideration in the research. The concept of sampling, as emphasized by (Sugiyono, 2021), includes the selection of a portion of a population based on specific characteristics. This concept is specifically important because when the population is extensive, several constraints such as limited funds, energy, and time makes it impractical to study every element. In the context of this research, the sample selection employed a purposive sampling technique, with the aim of obtaining a representative sample based on predefined criteria. Specifically, the criteria used include selecting the first fifteen banks with the largest market capitalization listed on the IDX.

3.3. Operational Research Variables

A research variable represents a specific characteristic or value in an object or activity that showcases variations. Generally, these

variations are being deliberated upon and studied with the aim of drawing meaningful conclusions (Sugiyono, 2021). In this research, two variables were used, including the following:

a. Independent variable

The independent variable, also known as the influencing variable, is the factor that instigates changes in the dependent variable. The independent variable examined in this research is the comparison between conditions before and during the COVID-19 pandemic.

b. Dependent variables

These are variables affected by the presence of independent variables. The dependent variables examined in this research are as follows:

1. Liquidity

Liquidity describes the capacity of companies to fulfill short-term obligations. In this context, LDR was used as a testing tool for the liquidity variable. LDR is typically measured by the Current Ratio which is formulated as follows:

$$\text{Current Ratio} = \frac{\text{Total Loans}}{\text{Total Deposito} + \text{Equity Capital}} \times 100 \quad (1)$$

2. Profitability

Companies' profitability can be evaluated through various methods, depending on the comparison of profits with assets or capital. In this research, the profitability ratio adopted is ROA, a metric used for indicating the return on company assets with based on management activities. ROA is formulated as follows:

$$\text{Return on Assets } (\text{ROA}) = \frac{\text{Net Income}}{\text{Total Assets}} \quad (2)$$

3. Operating expenses and operating income (BOPO)

BOPO represents a profitability ratio that compares operating expenses to operating income. This ratio is employed specifically to gauge companies' ability to effectively manage the amount of BOPO. As previously stated, the greater the operating expenses, the worse the company management, which means greater BOPO leads to less effectiveness and provides the tendency of potentially experiencing losses. On the other hand, a smaller BOPO ratio reflects better company management, and this provides companies with the potential to gain greater profits. BOPO is calculated through the division of operating expenses by operating income (operating expense/operating income).

$$\text{BOPO} = \frac{\text{Operating Expense}}{\text{Operating Income}} \times 100\% \quad (3)$$

4. Non-performing loan (NPL) ratio

NPL refers to credit-related issues where the debtor fails to fulfill the agreed-upon loan arrears and interest payments in the stipulated timeframe specified in the agreement. NPL ratio is formulated as follows:

$$\text{NPL} = \frac{\text{Problematic Credit}}{\text{Total Credit}} \quad (4)$$

3.4. Data Analysis Method

In this research, the adopted data analysis method involved descriptive analysis with a comparative approach. This method was selected specifically for its ability to offer a description regarding the performance of each bank acquired during the research while incorporating statistical testing. Accordingly, statistical test analysis was used to ascertain the differences between two sets of data. It is important to also state that the data processing carried out in this research leveraged the SPSS application, specifically using Descriptive Statistical Tests. Essentially, descriptive statistics were used to collect, manage, analyze, and eventually present data in a comprehensible format (Ghozali, 2021).

4. RESULTS AND DISCUSSION

4.1. Description of Research Objects

The Indonesian Stock Exchange listed a total of 46 banks between 2019 and 2021. However, the research sample comprised the first 16 banks with the highest market capitalization. It is also crucial to emphasize that the data used spanned 4 years, starting from 2018 to 2019, representing the period before the COVID-19 pandemic, and 2020-2021, denoting the period during the pandemic.

4.2. Analysis Results

4.2.1. Descriptive statistical test

Before conducting a test to ascertain the variance in banking financial performance before and during the pandemic, the initial step included a descriptive statistical analysis of the research variables. In this context, descriptive statistical analysis tests serve as a crucial step in the present research considering the fact the tests generally aim to present a comprehensive numerical overview or explanation of the data. Accordingly, the dataset used in this research comprises annual banking financial reports sourced from official bank websites. In total, the dataset consists of 64 data points which were processed and analyzed. The following are the results of the descriptive statistics test:

The descriptive statistics test results in Table 1 show that:

a. LDR (loan debt to ratio)

The average (Mean) value of the LDR variable before the COVID-19 pandemic was 88.36% and during the pandemic period, it decreased to an average value of 83.97%.

Table 1: Descriptive statistics test results

Indicator	n	Minimum	Maximum	Mean	Std. deviation
LDR before	32	47.54	113.50	88.366	13.185
LDR after	32	41.22	145.86	83.975	21.383
ROA before	32	0.10	1.20	0.470	0.254
ROA after	32	−1.00	1.05	0.189	0.413
BOPO before	32	0.40	258.09	90.463	39.276
BOPO after	32	0.40	261.10	90.722	42.738
NPL before	32	0.02	1.30	0.337	0.268
NPL after	32	0.04	4.95	1.522	1.431

Source: Processed by the author. LDR: Loan to deposit ratio, NPL: Non-performing loan, ROA: Return on assets, BOPO: Operating expenses and operating income

b. ROA (return on assets)
The average (Mean) value of the ROA variable before the COVID-19 pandemic was 1.15% and during the pandemic period, it decreased with an average value of 0.95%.

c. BOPO (operating expenses and operating income)
The average value (Mean) of the BOPO variable before the COVID-19 pandemic was 92.27%. This variable was observed to experience a significant increase with an average of 92.69% during the pandemic.

d. NPL (non-performing loan)
The average (Mean) value of the NPL variable before the COVID-19 pandemic was 2.0%, which later decreased to an average of 1.52% during the pandemic.

4.2.2. Classic assumption test

Typically, before proceeding with a hypothesis test, conducting a parametric statistical test through a normality test is essential. The standard criteria for determining normal distribution include a significance level >0.05 or 5%. In this research, the normality test utilized the Kolmogorov-Smirnov test to determine the adherence of the data to a normal distribution. According to existing standards, if the variable data conforms to a normal distribution, hypothesis testing proceeds using a parametric approach, specifically, a paired sample t-test. Meanwhile, if the data does not exhibit normal distribution, hypothesis testing will be conducted using a non-parametric approach, such as the Wilcoxon Signed Rank Test.

According to the Kolmogorov-Smirnov test results presented in Table 2, the variables with normal distribution in this research are as follows:
a. LDR (loan to debt ratio)
The normality test conducted on the LDR variable before and during the COVID-19 pandemic indicated that both datasets had a normal distribution. The significance level (Sig.) for LDR before the pandemic was 0.200, and it decreased to 0.082 during the pandemic, with both values surpassing the threshold of 0.05. As a result, the hypothesis test for LDR was performed utilizing the paired sample t-test due to the normal distribution observed in both datasets.

b. ROA (return on assets)
The data for ROA was found to have a normal distribution, evident from the significance values (Sig.) of 0.200 >0.05 which was observed for both the periods before and during the COVID-19 pandemic. As a result, a paired sample t-test was also performed for this variable.

Table 2: Kolmogorov smirnov normality test results

Variable	Std. Dev	Statistic	Sig.	Info
LDR before	13.185	0.089	0.200	Normal
LDR after	21.382	0.146	0.082	Normal
ROA before	0.254	0.117	0.200	Normal
ROA after	0.413	0.114	0.200	Normal
BOPO before	39.276	0.258	0.000	Abnormal
BOPO after	42.738	0.303	0.000	Abnormal
NPL before	0.268	1.431	0.066	Normal
NPL after	1.431	0.315	0.000	Abnormal

Source: Processed by the author. LDR: Loan to deposit ratio, NPL: Non-performing loan, ROA: Return on assets, BOPO: Operating expenses and operating income

c. BOPO (operating expenses and operating income)
The data for the BOPO variable did not exhibit normal distribution, as evident from the significance values (Sig.) of 0.000 <0.05 observed for both the periods before and during the pandemic. Considering this observation, the Wilcoxon signed ranks test was adopted for this variable.

d. NPL (non-performing loan)
The NPL variable showed a normal distribution before the onset of the pandemic. This was evidenced by the acquired significance value (Sig.) of 0.066, exceeding the established threshold of 0.05. However, following the COVID-19 pandemic, NPL no longer adhered to a normal distribution, as shown by a significance value (Sig.) of 0.000, falling below the 0.05 threshold. Considering the dual observation, the hypothesis testing concerning this variable necessitated the use of two distinct methods which include the paired sample t-test for pre-pandemic evaluation as well as the Wilcoxon Signed Ranks Test for assessment during the pandemic period.

4.2.3. Hypothesis testing

Hypothesis testing was utilized specifically to assess the influence of the periods before and during the COVID-19 pandemic on banking financial performance. The paired sample t-test was utilized for LDR, ROA, and NPL ratios prior to the pandemic, given the normal distribution of their respective data. However, for the BOPO and post-pandemic NPL ratio, the Wilcoxon Signed Rank Test was selected, given the non-normal distribution of the data used for these ratios. The following are the statistical analysis test results of the observed banking financial performance ratios in Indonesia:
a. LDR (*loan to deposit ratio*)
According to the test results provided, LDR showed an Asymp value of Sig. (2-tailed) as 0.346, indicating a result greater than the designated threshold of 0.05. Consequently, H01 is accepted, signifying no significant variance in the LDR financial ratio between the periods before and during the pandemic.

b. ROA (*return on assets*)
According to the test results presented in Table 4, ROA had an Asymp value of Sig. (2-tailed) as 0.007, falling below the predefined threshold of 0.05. Therefore, H02 was rejected, showing that there was a significant disparity in the ROA financial ratio between the periods before and during the pandemic.

c. BOPO (operating expenses and operating income)
According to the test results presented in Table 5, the BOPO variable showed an Asymp value of Sig. (2-tailed) as 0.784,

Table 3: LDR hypothesis test result using the paired sample t-test method

Model	Std. deviation	Std. Error Mean	t	df	Sig
Pair 1					
LDR before-LDR after	25.980	4.592	0.956	31	0.346

Source: Processed by the author. LDR: Loan to deposit ratio

exceeding the designated threshold of 0.05. Considering this finding, H03 was accepted, indicating that there was no significant difference in the BOPO financial ratio between the two observed periods.

d. NPL (*non-performing loan*)

The test results in Table 6 show that before the pandemic, NPLs had a Sig value of 0.000 below the threshold set at 0.05, showing a substantial difference in the NPL financial ratio before the Covid-19 pandemic.

The test results in Table 7 showed that both before and after the pandemic, NPL had an Asymp value of Sig. (2-tailed) as 0.000, falling below the established threshold of 0.05. Consequently, H04 was rejected, suggesting a substantial difference in the NPL financial ratio during the pandemic.

Table 4: ROA hypothesis test results using the paired sample t-test method

Model	Std. deviation	Std. Error Mean	t	df	Sig
Pair 1					
ROA before-ROA after	0.543	0.096	2.916	31	0.007

Source: Processed by the author. ROA: Return on assets

Table 5: BOPO hypothesis test results using method Wicoxon signed rank test

Model	BOPO after-BOPO before
Z	0.274[b]
Asymp. Sig. (2-tailed)	0.784

Source: Processed by the author. BOPO: Operating expenses and operating income

Table 6: NPL hypothesis test results before the pandemic using the method of paired sample t-test

Model	Std. deviation	Std. error mean	t	df	Sig
Pair 1					
ROA before -ROA after	1.403	0.248	−4.777	31	0.000

Source: Processed by the author. NPL: Non-performing loan, ROA: Return on assets

Table 7: NPL hypothesis test results after the pandemic using the method Wicoxon signed rank test

Model	NPL after
Z	−4.385[b]
Asymp. Sig. (2-tailed)	0.000

Source: Processed by the author. NPL: Non-performing loan

Table 8: Average banking financial performance

Indicator	Before	After	Differences
LDR	88.36	83.97	4.39
ROA	0.470	0.18	0.29
BOPO	90.46	90.72	−0.26
NPL	0.33	1.52	−2.19

Source: processed by the author. LDR: Loan to deposit ratio, NPL: Non-performing loan, ROA: Return on assets, BOPO: Operating expenses and operating income

4.3. Discussion

This research seeks to assess the financial performance of Indonesian banks before and during the COVID-19 pandemic. To accomplish this aim, 16 commercial banks were selected as the research sample based on their substantial market capitalization between 2018 and 2021. Table 8 presents the difference in average banking financial performance before and during the pandemic in Indonesia.

4.3.1. Differences before and after the pandemic in LDR

Based on the Paired Sample t-test analysis results presented in Table 3, LDR had an Asymp. Sig. (2-tailed) value of 0.346, exceeding the significance threshold of 0.05. This showed an absence of a substantial variance in the financial performance of LDR both before and during the pandemic. Table 8 shows that the average LDR decreased by 4.39%, shifting from 88.36% before the pandemic to 83.97% after. This decrease in LDR remained within the healthy range outlined by the regulations made by Bank Indonesia, falling between the minimum threshold of 50% and below the upper limit of 110%. Based on the obtained figures, it can be concluded that there was a stable credit distribution by banks amid the COVID-19 pandemic and LDR typically gauged banking liquidity. During the pandemic, the economic downturn adversely impacted both fund collection and credit distribution by banks. With a decline in economic growth and individuals experiencing decreased incomes, banks adopted a more conservative approach to disbursing credit. This cautious stance significantly influenced LDR, reflecting the broader economic fluctuations caused by the pandemic. The results of this hypothesis test align with Seto (2021), and Asykarulloh and Sultoni (2023), who stated that there was no change in LDR during the pandemic. Conversely, the results contrast with Devi et al. (2020) and Riftiasari and Sugiarti (2020) where it was stated that LDR experienced changes during the pandemic.

4.3.2. Differences before and after the pandemic in ROA

The results shown in Table 4, using the Paired Sample t-test analysis, demonstrated an Asymp. Sig. (2-tailed) value of 0.007, which is lower than the significance threshold of 0.05. This signifies a significant variance in the financial performance of ROA before and during the pandemic. Accordingly, by examining Table 8, the average ROA declined by 0.29%, shifting from 0.47% before the pandemic to 0.18% after. Despite this decrease, the decline in ROA remained in the healthy range stipulated in the regulations by Bank Indonesia, maintaining a level between 0.5% and 1.25%. The discernible disparity in ROA values before and during the pandemic comprehensively showed the impact of the pandemic on banking performance, particularly in asset management. Furthermore, this observed shift can be concluded to be influenced by the difficulties faced by banking customers in meeting credit obligations, which, in turn, disrupted banking performance. The results of this hypothesis test align with Surya and Asiyah (2020), which reported a shift in LDR amid the pandemic. However, this contradicted Sutrisno et al. (2020) as well as Ilhami and Thamrin (2021) where no alteration in the ROA ratio was observed during the pandemic.

4.3.3. Differences before and after the pandemic in BOPO

The analysis of BOPO, which was conducted utilizing the Wilcoxon Signed Test, as presented in Table 5, showed an Asymp value of Sig. (2-tailed) as 0.784, exceeding the 0.05 threshold. This implied a lack of difference in the financial performance concerning the BOPO ratio before and during the COVID-19 period. Reviewing Table 8, the average BOPO increased by 0.26%, rising from 90.46% before the COVID-19 pandemic to 90.72% after. This increment falls within the healthy range specified by the criteria of maximum values between 94% and 96%. In accordance with this, BOPO during the pandemic was considered healthy as it remains below an average of 91%. It is essential to comprehend that an escalating BOPO ratio indicates a setback in the management of operating expenses of banks. Typically, this increase can be attributed to a decline in interest income due to restructuring efforts aimed at mitigating the rise in bad loans. The results obtained from this hypothesis testing align with Sutrisno et al. (2020), which indicated no alteration in bank performance concerning the BOPO variable before and during the pandemic. Nevertheless, it contradicts Surya and Asiyah (2020) and Riftiasari and Sugiarti (2020), where a significant difference in bank performance was observed and attributed to the BOPO variable before and during the pandemic.

4.3.4. Differences before and after the pandemic in NPL

The analysis conducted on NPL, which was conducted utilizing both the Wilcoxon Signed Test and Paired Sample t-test, resulted in an Asymp. Sig. (2-tailed) value of 0.000, falling below the 0.05 threshold. This showed a discernible difference in the financial performance associated with NPL ratio before and during the pandemic period. Based on Table 8, the average NPL increased by 2.19%, rising from 0.33% before the COVID-19 pandemic to 1.52% after. Despite this increase, the NPL ratio was found to remain in the healthy range stipulated by Bank Indonesia, which sets the threshold at values below 5%. The relatively insignificant rise might be attributed to the stimulus impact of the COVID-19 pandemic, which was facilitated by the government through Financial Services Authority Regulation No. 11 of 2020. This regulation directed banks to offer relief to debtors, allowing credit restructuring consisting of reduced interest rates, arrear reductions on both principal and interest and extensions in loan terms. These measures facilitated improvements in the quality of disbursed credit and prevented a significant increase in NPL. Furthermore, considering this variable, previous research by Riftiasari and Sugiarti (2020) showed a significant disparity in bank performance associated with the NPL variable before and during the pandemic. This observation was in contrast with Sutrisno et al. (2020), who stated that NPLs experienced no alterations before and during the pandemic.

5. CONCLUSION

In conclusion, based on the comparative testing results of financial performance before and during the COVID-19 pandemic, the observations were made as follows, no significant difference was observed in the financial performance of LDR both before and during the COVID-19 pandemic. There was a stable credit distribution by banks amid the COVID-19 pandemic and LDR typically gauged banking liquidity. During the pandemic, the economic downturn adversely impacted both fund collection and credit distribution by banks. With a decline in economic growth and individuals experiencing decreased incomes, banks adopted a more conservative approach to disbursing credit. The financial performance of ROA showed a substantial difference between the two observed periods. The discernible disparity in ROA values before and during the pandemic comprehensively showed the impact of the pandemic on banking performance, particularly in asset management. Furthermore, this observed shift can be concluded to be influenced by the difficulties faced by banking customers in meeting credit obligations, which, in turn, disrupted banking performance.

The financial performance of BOPO showed no substantial difference between the two periods. It is essential to comprehend that an escalating BOPO ratio indicates a setback in the management of operating expenses of banks. Typically, this increase can be attributed to a decline in interest income due to restructuring efforts aimed at mitigating the rise in bad loans. The financial performance of NPL showed a significant difference between the two periods. The relatively insignificant rise might be attributed to the stimulus impact of the COVID-19 pandemic, which was facilitated by the government through Financial Services Authority Regulation No. 11 of 2020. This regulation directed banks to offer relief to debtors, allowing credit restructuring consisting of reduced interest rates, arrear reductions on both principal and interest and extensions in loan terms. These measures facilitated improvements in the quality of disbursed credit and prevented a significant increase in NPL.

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