

**FINANCIAL PERFORMANCE MEASUREMENT, ANALYSIS & EVALUATION
OF FINANCIAL HEALTHINESS OF REGIONAL DEVELOPMENT BANKS
INDUSTRY BEFORE AND DURING COVID-19 PANDEMIC
(2016-2023): EVIDENCE OF BANK BJB AND BANK JATIM**



THESIS

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**MASTER OF BUSINESS ADMINISTRATION
SEKOLAH TINGGI MANAJEMEN IPMI JAKARTA
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A THESES

**Submitted in a partial fulfillment of the requirements for the degree of Master of
Business Administration**

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Financial Healthiness of Regional Development Banks Industry
Before and During Covid-19 Pandemic (2016-2023): Evidence
of Bank bjb and Bank Jatim

We hereby declare that this Thesis is from student's work, has been read and presented to Sekolah Tinggi Manajemen IPMI Board of Examiners, and has been accepted as part of the requirements needed to obtain a Master of Business Administration Degree and has been found to be satisfactory.

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NON-PLAGIARISM DECLARATION FORM

This Thesis is a presentation of our research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature and acknowledgement of collaborative research and discussions.

Also, this work is being submitted in partial fulfilment of the requirements for the Master of Business Administration degree, has not previously been accepted in substance for any degree, and is not being concurrently submitted in candidature for any degree.

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Materai

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ABSTRACT

Banks, as financial institutions that manage money and related services, have a major role in accepting deposits, providing loans, and making profits from the difference in fees. The focus of this thesis is the evaluation of the health level of Regional Development Banks (BPD's) listed on the Indonesia Stock Exchange (IDX) using the RBBR (Risk-Based Bank Rating) assessment and the Altman Z-Score model. Specifically, this study provides a comprehensive analysis of the financial health level of BUMD Banks, namely Bank bjb and Bank Jatim. In assessing the financial health, various financial indicators are utilized by combining the RBBR method and the Altman Z-Score model, providing an overall picture of the stability and financial health of these Banks amidst the dynamics of the Indonesian economy. In addition, this study also includes the use of a t-test to evaluate significant differences in the financial health of regional development Banks before and during the COVID-19 period. Including the t-test allows us to assess the impact of the pandemic on the financial condition of the Banks, providing additional valuable insights for stakeholders, regulators, and the public in dealing with the challenges facing the Banking industry.

Keywords: Bank financial health level, Risk Based Bank Rating, Altman Z-Score model, t-test score.

CHAPTER 1

INTRODUCTION

1.1 Description Background

In simple terms, a bank is a place to save and borrow money. However, as explained in Law Number 10 of 1998 concerning Banking which is an amendment to Law Number 7 of 1992, Banks are mentioned as business entities that collect funds from the public in the form of deposits and channel them to the public in the form of credit and or other forms to improve people's lives. SAL POJK 4/POJK.03/2016 Article 1 paragraph 1 states that a Bank is a commercial bank as referred to in Law Number 7 of 1992 concerning Banking as amended by Law Number 10 of 1998, including branch offices of banks domiciled abroad, which carry out business activities conventionally.

The structure of banks in Indonesia consists of commercial banks and BPR (Banking Law, 1992), the difference lies in their operational activities. Commercial Banks are Banks that carry out business activities conventionally and or based on Sharia Principles which in their activities provide services in payment traffic, while Rural Banks (BPR) are Banks that carry out business activities conventionally or based on Sharia Principles which in their activities do not provide services in payment traffic (Law 10 of 1998; article 1 point 4).

In Indonesia there are two types of Banks, Banks owned by the state are grouped as State-Owned Enterprises (BUMN) and Banks owned by Local Governments (BUMD). The Regional Development Bank (BPD) was established based on Law No. 13 of 1962 concerning Basic Provisions of Regional Development Banks (BPD) with the specific intention of providing financing for

the implementation of regional development efforts within the framework of the National Development Plan (Article 4). In line with the mandate of the law, BPDs provide credit for the purposes of investment, expansion, and renewal of development projects in the region (Article 5), both those organized by the region and those organized by mixed companies between local governments and the private sector.

In general, BPD, which is included in the category of commercial banks, also experiences challenges and obstacles, but because BPD is in the region and owned by the local government, the problems it faces are quite complex compared to commercial banks owned by the central government. There are currently twenty-seven recognized regional development banks in Indonesia. Through the "BPD Transformation" program launched by the Financial Services Authority, BPD is expected to become a highly competitive and strong bank and contribute significantly to sustainable regional economic growth and equity.

BPD has a strategic role in accelerating economic growth and regional development, with the main task of developing the economy and driving regional development. The evolution of technological developments that are also faced by BPD, adds to the root of BPD's problems, namely low competitiveness, weak GCG, and support from stakeholders, especially the Regional Government as a shareholder to transform BPD into an obstacle to innovation.

The weak business sustainability of BPD and the implementation of its role as an agent of regional development is the impact of weak competitiveness rooted in the "comfort zone" in the protection of captive markets. BPD was created with a segmentation owned by local governments with a core business of ASN / PNS, so

the development of innovation is considered less attractive because it already has a clear source of income, so the effort to innovate in creating new programs or improving the quality of financial performance services is low. However, this cannot be ignored. The existence of business competition with other commercial banks, forcing BPD to make structural improvements to be able to take advantage of opportunities and compete in an increasingly competitive environment.

Monitoring and evaluation (Monev) of the Bank's performance is very important, it can help identify the strengths and weaknesses of the Bank's performance and can identify steps that can be taken to change the Bank's performance. Monev of the Bank's performance can also be a tool for consideration in making investment decisions, reducing investment risk, and mitigating losses caused by unforeseen events such as natural disasters, epidemics, etc.

In the past five years, there have been several events affecting economic growth. At the end of 2019, the World Health Organization (WHO) announced that a coronavirus infection, an infectious disease that affects the respiratory system and causes restrictions on human activity, was discovered in Wuhan, China. The impact of the coronavirus is very significant on the global economy, including Indonesia.

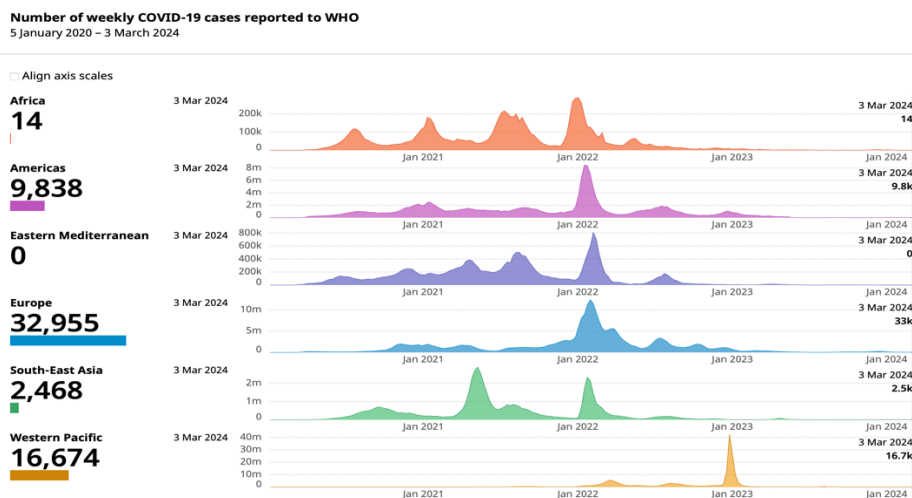


Figure 1: Number of weekly COVID-19 cases reported to WHO 2024.

Source: World Health Organization, 2024

The COVID-19 pandemic has had a major impact on the Indonesian economy, ranging from changes in global supply chains to reduced foreign investment in Indonesia. The decline is reflected in the slowdown in economic growth which fell from 5.02% in 2019 to 2.97% in 2020. This slowdown in economic growth was followed by an increase in the number of unemployed people which increased from 5.28% in 2019 to 7.07% in 2020, according to World Bank data. (Melati, W.P., 2023).

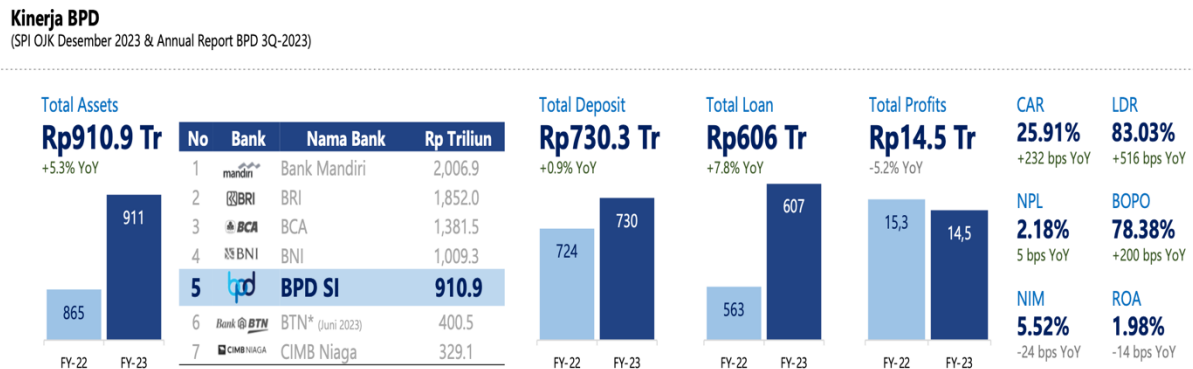
The Covid-19 pandemic has changed global lifestyles and economies. Restrictions such as mask wearing, distancing, and crowd avoidance directly limit economic activity, including the production, distribution, and marketing of goods. World supply chains are disrupted due to factory closures and lockdowns, slowing down the entire cycle.

According to the International Monetary Fund (IMF), the economic crisis due to Covid-19 will be more severe than during the 2008 economic crisis. This will have an impact on global financial markets. The market price trend is experiencing stock price volatility and most of it is a downward trend since the outbreak of Covid-19. Covid-19 has made the market negative due to low investor valuations (Nasution et al. 2020).

Indonesia, which participates in the global supply chain, was seriously affected with a decline in exports of about 2.6% in 2020. The pandemic increased economic uncertainty, lowered investor confidence, and resulted in a decline in investment. Uncertainty and decreased demand for goods and services negatively impacted corporate profits and stock prices on the Indonesia Stock Exchange.

Despite the covid situation, the performance of regional development banks is in fact able to survive, this is evidenced by the positive performance generated, the total assets of BPD grew 5.3% yoy or amounted to 910.9 T.

Figure 2: Performance of Regional Development Banks in Indonesia



(Source: Asbanda:2024)

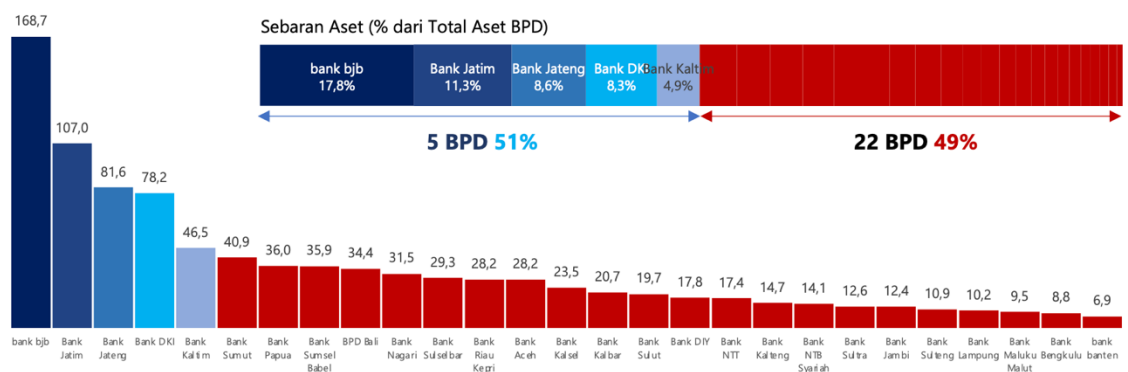
The growth of BPD performance cannot be separated from the financial distress monitoring that is implemented. According to Brigham and Daves, 2013 Financial Distress occurs due to a series of errors, improper decision making, and interconnected weaknesses that can have direct or indirect effects on management. Financial Distress can be seen from the Bank's performance indicators, namely the lack of funds to pay off short-term company obligations (liquidity) to the lack of funds to pay off all company obligations (solvency) Theodorus and Artini, 2018.

The condition of financial difficulties can be seen from the Bank's performance indicators, namely the lack of funds to pay the company's obligations in the short term (liquidity), to the lack of funds to pay off all company obligations (solvency).

This research will specifically discuss the Health Level of BUMD Banks that have been listed on the Indonesia Stock Exchange (IDX), namely Bank bjb and Bank Jatim with the issuer codes BJBR and BJTM.

Bank bjb is the strongest Regional Bank with total assets of 168.7 T, while Bank Jatim has assets of 107.0 T, or is in second place among 27 BPD SI.

Figure 3: BPD's asset distribution.



(Source: Asbanda: 2024)

Banking in Indonesia is required to follow the regulations set by the regulator, based on POJK No.4/POJK.03/2016 concerning Health Level Assessment of Commercial Banks, it is stated that Banks are required to conduct a Health level assessment using the Risk Based Bank Rating method both individually and on a consolidated basis (Chapter one Article two, third point), it is also stated that the Bank's health level is the result of an assessment of the Bank's condition carried out on the risks and performance of the Bank.

The primary emphasis of this study is to measure and analyze the financial performance while assessing the overall health of the Banking sector in Indonesia. This research delves into the expansion of existing studies, specifically examining the outcomes of the COVID-19 pandemic on the financial performance of the Banking industry.

Financial statements are basically the result of an accounting process that can be used as a tool to communicate between financial data or a company's activities and parties with an interest in the company's data or activities (Brown & Ronen, 2013). This research will be conducted using the RBBR and Altman Z-Score methods, by observing financial ratios from the financial statements of each bank for the Q1-Q4 period from 2016-2023.

The Altman Z score model or known as the modified Altman Z score is commonly used in this study. The Z-Score model is used as a tool to evaluate company credibility through financial ratios. It is calculated using various financial ratios, such as working capital to total assets, retained earnings to total assets, and earnings before interest and taxes to total assets.

The score values determine a company's health level, with values above a certain threshold indicating good health and values below indicating potential Bankruptcy. By evaluating the Z-Score and financial ratios, businesses can assess their financial performance, make improvements, and ensure their survival and competitiveness.

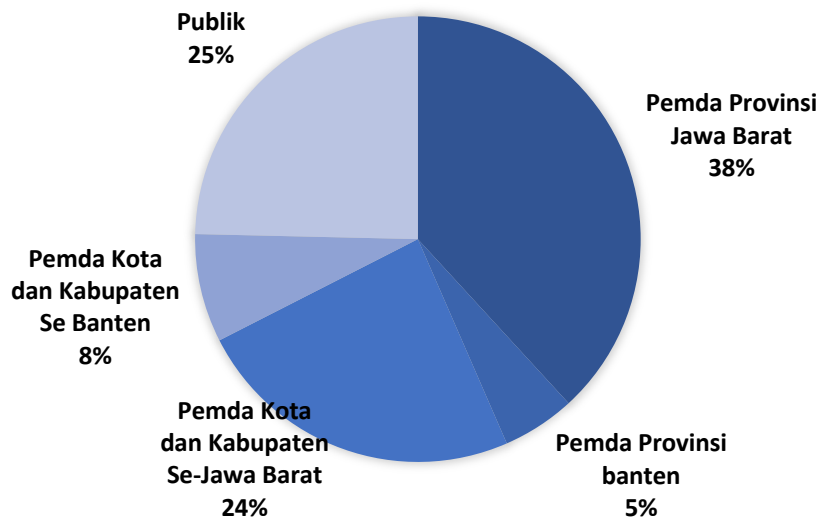
1.2 Company Background

1.2.1 PT Bank Pembangunan Daerah Jawa Barat dan Banten Tbk (Bank bjb)

Bank bjb, headquartered in Bandung, is a bank owned by the regional government of West Java and Banten provinces, established on May 20, 1961, with the status of Limited Liability Company (PT) and currently its status has changed to Regional Owned Enterprise (BUMD).

On July 8, 2010, Bank bjb officially became the first Regional Development Bank (BPD) to be listed on the Indonesia Stock Exchange.

Figure 4: Bank bjb share ownership.



(source: Bank bjb annual yearbook 2023)

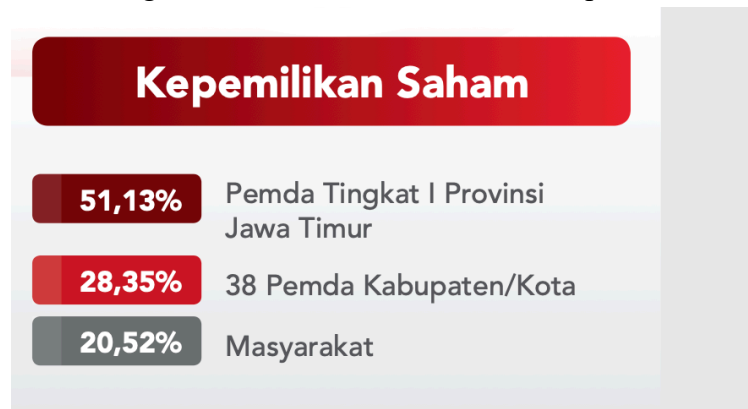
Bank bjb has 1 head office, 5 regional offices, 64 branch offices, 819 sub-branch offices (KCP), 6 MSME centers, 18 priority bjb services, 10 weekend banking services, 1775 Bank bjb ATMs, 177 Cash Recycle Machine (CRM), with a total of 7,413 employees.

1.2.2 PT Bank Pembangunan Daerah Jawa Timur Tbk (Bank Jatim)

PT Bank Pembangunan Daerah Jawa Timur Tbk (Bank Jatim) was established on August 17, 1961, under the name PT Bank Pembangunan Daerah Djawa Timur. In 1976 its legal status changed to a Regionally Owned Enterprise and began operating as a foreign exchange bank in 1990. Bank Jatim opened an initial public offering of Bank Jatim shares on July 12, 2012, with the issuer code BJTM.

Bank Jatim has 1 Head Office, 48 Branch Offices, 173 Sub-branch Offices (KCP), 216 Functional Offices, 199 Payment Points, 854 ATMs, 94 CRMs, 39 Mobile Cash/Cash ATMs, and 196 Sharia Service Offices. As of December 2023, Bank Jatim has 4,544 employees.

Figure 5: Bank Jatim share ownership.



(source: Bank Jatim annual yearbook 2023)

1.3 Research Problems

The COVID-19 pandemic has significantly impacted the Banking sector, posing challenges to maintain optimal company performance and overall health. In navigating these challenges, it becomes imperative for Banking industries to assess and analyze their financial performance and health. This evaluation is crucial as it can have substantial implications for the sustainability of the business.

To ensure a comprehensive understanding of the risks associated with the COVID-19 pandemic, it is essential for shareholders, stakeholders, and investors to be informed about the financial performance and health of Banking companies. This research not only facilitates an examination of the past but also enables a strategic assessment of the current situation. It provides a foundation for informed decision-making to confront the challenges.

1.4 Research questions.

Based on the information and problem statement above, this study would like to answer these questions:

1. How does the financial performance of Banking companies before and during the COVID-19 pandemic in terms of Risk Based Rating Ratio?
2. How do differences in the financial performance of banking companies vary between before and during the COVID-19 pandemic?
3. How was the financial health of banking companies before and during the COVID-19 pandemic?

1.5 Research Objectives

This study provides crucial business insights for banking companies, enabling informed decision-making on sustainability and investment prospects. It examines financial performance, assesses overall health, and forecasts future sustainability, thereby enhancing the understanding of shareholders, stakeholders, and investors.

The research objectives are:

1. To evaluate the financial performance of banking companies before and during the COVID-19 pandemic in terms of Risk-Based Rating Ratios.
2. To assess the differences in the financial performance of banking companies between before and during the COVID-19 pandemic.
3. To analyze the financial health of banking companies before and during the COVID-19 pandemic.

1.6 Significance of the study

1.6.1 Theoretical benefits:

The significance of this study lies in the comprehensive evaluation of the financial performance and financial health of Regional Development Banks listed on the Indonesia Stock Exchange (IDX). Using Risk-Based Bank Rating and Altman Z-Score models, this study aims to provide a comprehensive analysis of regional development banks, with a focus on Bank bjb and Bank Jatim. This research can also increase knowledge on risk assessment models in the context of regional banks, in the application and effectiveness of Risk-Based Bank Rating and Altman Z-Score models.

1.6.2 Practical benefits:

This research is useful for stakeholders, such as investors, regulators, and policy makers in assessing the stability and viability of the Bank, by considering risk factors and overall financial health from the research results using the RBBR and Altman Z-Score models. The results of this study may have implications for regulatory policies related to Regional Development Banks, assisting Supervisors in formulating effective measures to ensure the stability of the Bank's business sustainability.

CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1. Risk-Based Bank Rating (RBBR).

According to the regulations contained in Law Number 10 of 1998, the Bank has the responsibility to maintain its soundness. In the context of policy making and future supervision of the Bank, the assessment of the Bank's soundness level is very important. Therefore, Bank Indonesia and the Financial Services Authority, which are the Bank's supervisory institutions, have a crucial role in ensuring the implementation of risk management in each Bank.

The former policy involved the utilization of the CAMELS ratio, as outlined in Bank Indonesia Regulation No. 6/10/2004 regarding the Assessment of Commercial Banks' Health Ratings using the CAMELS approach. CAMEL stands for five factors used to assess the health or performance level of a Bank: Capital Adequacy, Asset Quality, Management, Earnings and Liquidity.

The updated approach to evaluate Bank soundness with a risk approach called Risk Based Bank Rating is issued by the Bank Indonesia and the Financial Services Authority (OJK) under regulation No. 13/1/PBI/2011, followed by the Circular Letter of the Financial Services Authority (OJK) in SE OJK No. 14/SEOJK. 03/2017 (Suryani and Habibie, 2017).

Mentioned in the provisions of POJK No. 4/POJK.03/ 2016 Article two, third paragraph concerning Health Level Assessment of Commercial Banks, Banks are required to assess the Health Level of the Bank using a risk approach (Risk-based Bank Rating) both individually and on a consolidated basis, with the scope of assessment of the factors (1) Risk profile (Non-Performing Loan (NPL) and Loan to Deposit Ratio (LDR), (2) Good Corporate Governance (GCG), (3) Earnings (ROA and NIM), (4) capital (CAR).

2.1.1.1. Risk Profile

According to Bank Indonesia Regulation No. 13/1/PBI/2011, a risk profile includes an assessment of inherent risk and the quality of risk management implementation in bank operations, which includes eight main risks: credit, market, liquidity, operational, legal, strategic, compliance, and reputation risks.

2.1.1.2. Good Corporate Compliance

Based on POJK No. 55/POJK.03/2016 regarding the Implementation of Corporate Governance for Commercial Banks are required to conduct periodic self-evaluations to assess the implementation of bank governance and prepare a governance implementation report at the end of the year. The implementation of governance must be based on basic principles, which include transparency, accountability, responsibility, independence, and fairness, in accordance with SEOJK No. 13/SEOJK.03/2017.

2.1.1.3. Earnings

The profitability factors assessment contains earnings performance, sources of profitability, the sustainability of profitability, and management of earnings (Fannywaty & Daryanto, 2019). As a result, the profitability ratio is a method used to evaluate a company's ability to generate profits from its own resources. Analyzing profitability ratios can also provide a broad picture of how well the company's management is managing the business and how competitively positioned the business is in the market.

2.1.1.4. Capital

There are two objectives of Capital supervision, namely the Bank is responsible for all transaction activities, especially in lending, because the funds used are its own funds and third-party funds, besides that the Bank is not only focused on developing business from available assets, but also expected to have its own capital support. Capital is part of the banks' funding sources, which can be used to raise another fund, bank capital, as a protection to absorb shocks from loss of business (Greuning and Iqbal, 2011).

2.1.2. Altman's Z-Score Prediction Model

Altman's Z-Score model, introduced by Professor Edward Altman in 1968, is a financial analysis tool that aims to predict the potential bankruptcy of a company. The model serves as a tool for assessing a company's financial health by combining several financial ratios. The Z-Score provides clues as to whether a company faces the risk of bankruptcy or not.

According to Rudianto (2013: 257), after conducting research with the object of various manufacturing companies and producing two formulas, Altman did not stop. Altman conducted more research on the potential bankruptcy of companies other than manufacturing companies, both those that went public and those that did not. The last Z-Score formula is a very flexible formula because it can be used for various types of company business fields, both those that go public or not, and is suitable for use in developing countries such as Indonesia.

2.1.3. t-Test Statistic

Daryanto, William (2022) said the partial test (partial testing) was conducted to partially determine each independent variable's effect on the dependent variable. The t-test is performed using either a known population standard deviation or a sample standard deviation. The test evaluates interval scores. A normal distribution is essential, but if the data are heavily incorrect, a nonparametric test, such as a binomial test, is preferred, with each example scored as above (1) or below (0) the a priori mean. When just the sample standard deviation is available, use a t-test; if the population standard deviation can be supplied, use a z-test.

2.1.4. Hypothesis Testing

Hypothesis testing is a statistical hypothesis test is used to decide if data support specific hypothesis. The decision rule in hypothesis testing specifies which values of the test statistic will cause the rejection of the null hypothesis in favor of the alternative hypothesis. Hypothesis testing can produce a p-value, indicating the surprise level in learning that the null hypothesis

produced the data. There are two types of errors in hypothesis testing: type I error, when the null hypothesis is wrongly rejected, and type II error, when the research hypothesis is wrongly accepted. (Andrew et al., 2022).

2.2. Hypothesis Development

2.2.1. Financial Performances of Banking Companies

2.2.1.1. Non-Performing Loan (NPL)

Non-Performing Loan refers to a loan that has defaulted or has not made the expected interest and principal payments for a certain period. In other words, a non-performing loan is one where the borrower has failed to make payments over a certain period, indicating a higher risk of default. According to Daryanto, (2022) The NPL ratio is an indicator proxied in measuring the effect of the risk profile in the assessment a bank will face on its stock return.

Banks use the NPL ratio as a key indicator to assess credit risk, as it compares the number of non-performing loans to the total loans in the portfolio. The NPL ratio also shows its relationship with the Bank's profitability. Bank Indonesia Circular Letter No. 13/30/DPNP stipulates that the NPL ratio of a healthy bank should not exceed 5% of total loans.

As shown in Table 1, the NPL parameter criteria indicate that a higher NPL ratio may signify potential credit risks and financial instability within the banking company.

Table 1: NPL Parameter Criteria

Criteria	Rating
NPL <2%	Very Healthy
2% ≤ NPL < 5%	Healthy
5% ≤ NPL < 8%	Quite Healthy
8% ≤ NPL < 12%	Less Healthy
NPL ≥ 12%	Unhealthy

BI Circular Letter No. 13/24/DPNP/2011

2.2.1.2. Loan Deposit Ratio (LDR).

Loan Deposit Ratio used to measure Risk Liquidity. Achsani et al. (2021) stated that the possible loss caused by the Bank's inability to fulfill its responsibilities or fund the increase in assets could also be defined as liquidity risk which reflects the Bank's ability to fulfill deposit withdrawals and other liabilities.

When assessing liquidity risk, it cannot be detached from the role of Bank liquidity itself. In the liquidity of a Bank, the relationship between Bank liquidity risk and profitability is inversely proportional (Van Horne & Wachowiz, 2022). Therefore, it can be said that high Bank liquidity will yield low profits. On the other hand, when the level of liquidity is low, it means the Bank will produce high profits.

Based on the formula, the higher this ratio signifies the Bank is aggressive in channeling its credit funds, while the smaller this ratio means, the more significant the third-party funds that are not used for lending (Taswan, 2010). A low LDR indicates that the bank is not using funds efficiently to lend, while a high LDR signals the

bank's dependence on external loans, which can increase credit and liquidity risk.

Table 2 displays the parameter criteria for Loan to Deposit Ratio (LDR), indicating that the optimal LDR is the one with a balanced value.

Table 2: LDR Parameter Criteria.

Criteria	Rating
$LDR \leq 75\%$	Very Healthy
$75\% < LDR \leq 85\%$	Healthy
$85\% < LDR \leq 100\%$	Quite Healthy
$100\% < LDR \leq 120\%$	Less Healthy
$LDR > 120\%$	Unhealthy

SE OJK No. 14/SEOJK.03/2017

2.2.1.3. Return on Asset (ROA)

ROA assesses a company's ability based on past profits so that it can be used in the future or the next period. The high ROA means the company is efficient in utilizing its assets (Bodie, 2014). Return on Asset (ROA) measures how effectively a bank utilizes its assets to generate profits. A higher ROA indicates better profitability and efficiency in asset management. Table 4 presents the parameter criteria for Return on Assets (ROA). It outlines the benchmarks or standards used to evaluate the performance of ROA.

Table 3: ROA Parameter Criteria

Criteria	Rating
$ROA > 1.5\%$	Very Healthy
$1.25\% < ROA \leq 1.5\%$	Healthy
$0.5\% < ROA \leq 1.25\%$	Quite Healthy
$0\% < ROA \leq 0.05\%$	Less Healthy
$ROA \leq 0\%$	Unhealthy

Source: BI Circular Letter No. 13/24/DPNP/2011

2.2.1.4. Net Interest Margin (NIM)

Net Interest Margin is the ability of Banks to generate net interest income by placing productive assets owned by companies (Sari and Dahar, 2016). A good Net Interest Margin should be sufficient to cover the operational expenses of the bank and provide a profit margin substantial enough for the bank to grow and develop steadily. Table 5 presents the parameter criteria for Net Interest Margin.

Table 4: NIM Parameter Criteria

Criteria	Rating
$NIM > 3\%$	Very Healthy
$2\% < NIM \leq 3\%$	Healthy
$1.5\% < ROA \leq 3\%$	Quite Healthy
$1\% < NIM \leq 1.5\%$	Less Healthy
$ROA \leq 1\%$	Unhealthy

Source: BI Circular Letter No. 13/24/DPNP/2011

2.2.1.5. Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio is an important financial metric that assesses a Bank's ability to cover potential losses. It reflects the proportion of risk-weighted assets funded by the Bank's own capital, without incorporating external sources.

CAR serves as the basis for the Bank's operational resilience, especially in credit activities. Bank Indonesia requires the maintenance of a healthy CAR to ensure liquidity stability and accurate financial analysis. A high CAR indicates good risk absorption and overall stability of the Bank.

Table 5: CAR Parameter Criteria

Criteria	Rating
CAR <14%	Very Healthy
$12\% \leq \text{CAR} < 14\%$	Healthy
$10\% \leq \text{CAR} < 12\%$	Quite Healthy
$8\% \leq \text{CAR} < 10\%$	Less Healthy
$\leq 8\%$	Unhealthy

Source: BI Circular Letter No. 13/24/DPNP/2011

2.2.2. Financial Healthiness of Banking Companies

2.2.2.1. Working Capital to Total Asset

This ratio shows the company's ability to generate net working capital from its total assets. This ratio is calculated by dividing net working capital by total assets.

X1: Working Capital to Total Asset of Banking Companies

2.2.2.2. Retained Earnings to Total Assets

This ratio shows the company's ability to generate retained earnings from the company's total assets. Retained earnings are profits that are not distributed to shareholders. Retained earnings show how much of the company's income is not paid in the form of dividends to shareholders.

X2: Retained Earnings to Total Asset of Banking Companies

2.2.2.3. Earnings Before Interest and Tax Total Assets

This ratio shows the company's ability to generate profit from its assets before interest and tax payments.

X3: Earnings Before Interest and Tax to Total Assets of Banking Companies

2.2.2.4. Book Value of Equity to Book Value of Debt

This ratio shows the company's ability to meet its obligations from the market value of its own capital (common stock). The market value of own equity is obtained by multiplying the number of common shares outstanding by the market price per common share. The book value of debt is obtained by summing current liabilities with long-term liabilities.

X4: Market Value of Equity to Total Liabilities of Banking Companies

2.3. Theoretical Hypothesis

H1: The Non-Performing Loan ratio of the bank was lower before the pandemic compared to during the COVID-19 pandemic.

H2: The Loan-to-Deposit ratio of the bank is balanced before the pandemic compared to during the COVID-19 pandemic.

H3: The Return on Assets ratio of the bank was higher before and during the COVID-19 pandemic.

H4: The Net Interest Margin ratio of the bank was higher before and during the COVID-19 pandemic.

H5: The Capital Adequacy Ratio of the bank was higher before and during the COVID-19 pandemic.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

This study analyzes two banking companies' financial performance and financial health using quantitative methods, detailing the research design, instrument, data collection method, data quality and reliability, and analysis instrument. Quantitative analysis intends to see the correlation of the variables by testing the hypotheses proposed in this study by means of different statistical research methods. Carrying out quantitative research improved the validity of a research, leveraging statistical methods for measuring results conclusively (Mitchell, 1925).

This research design outlines a systematic approach to addressing a problem, including data collection, classification, analysis, and conclusion formulation. Figure 6 illustrates the sequential steps of the research phases, beginning with the identification of the research topic, followed by the literature review, problem definition, formulation of research questions and objectives, determination of research methodology, establishment of the research framework, data collection and application of statistical methods, data analysis, and, finally, the drawing of conclusions and recommendations.



Figure 6: Research Design, 2024

The study uses purposive sampling to gather data from two banking companies, PT Bank Pembangunan Daerah Jawa Barat dan Banten Tbk and PT Jawa Timur Tbk, spanning 2016–2023. The data includes 32 quarterly financial reports, with 2020 as the cutoff period for comparison during the COVID-19 pandemic.

3.1.1. Scope and Limitation of the study

This study is limited to the assessment of the financial health of two regional development Banks (BPD) listed on the Indonesia Stock Exchange, namely BJBR and BJTM. The research will assess the financial health of banks using the Financial Services Authority's regulation POJK 4/POJK.03/2016 criteria, focusing on risk profile, earnings, and capital using the Risk-based Bank Rating approach. This study will primarily focus on quantitative aspects, excluding Good Corporate Governance discussion due to its quantitative nature. The type of data used in this study is quantitative data, namely data in the form of numbers. (Sugiyono,2010:23).

3.1.2. Sample Selection and Data Collection

This study uses data from audited financial reports published on the Indonesia Stock Exchange (IDX). The data can be accessed through the website www.idx.co.id. and the publication of financial reports on the website of each Bank. The type of data used is quantitative data presented in the form of numbers.

The population of this study is represented by Regional Development Banks listed on the IDX with a total of two companies. The sample taken by objective method has the following criteria:

1. The company is focusing on the Banking industry.
2. Listed on IDX to obtain reliable data, easy to access, and the company is committed to fulfilling good company governance standards.
3. The company has been registered on IDX before COVID-19 appeared.
4. The audited financial report for 2018-2023 was accessible.

The total population of Banking companies listed on IDX was two, Bank bjb and Bank Jatim. Two Banking were chosen based on listing date to provide data needed for quarterly reports from 2016 to 2023.

3.1.3. Relationship with and value added to previous research.

Numerous research has been conducted to determine the worth of projects using the RBBR and Altman Z Score analysis.

NO	AUTHOR & TITLE OF RESEARCH	VARIABLE (S) OF INTEREST	FINDINGS
1	Ferrari, W., & Daryanto, W. M. (2022) The Effects of Risk-Based Bank Rating on Stock Return: Evidence of BUKU II Banks in Indonesia	Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Net Interest Margin (NIM), Return on Assets (ROA), Capital Adequacy Ratio (CAR) as independent variables, and its relationship with the stock return as a dependent variable.	Results showed that NPL, LDR, ROA, and NIM did not significantly affect stock return, indicating that these ratios did not affect investor decisions in these Banks. Despite significant growth or decline, these factors did not affect market sentiment. However, the Capital Adequacy Ratio (CAR) was found to have a significant influence on stock returns, which can be used to assess the condition of Banks in obtaining profits.
2	Ambarita, A. S., & Tristiarto, Y. (2024).	Dependent variable: bank health level	PT Bank Pembangunan Daerah Jawa Barat and Banten, Tbk, was given a

	Analysis Of the Health Level of Pt. Bank Pembangunan Daerah Jawa Barat dan Banten, Tbk with Risk Based Bank Rating (RBBR) Method	<p>Independent variable:</p> <ul style="list-style-type: none"> - Risk Profile: Non-Performing Loan (NPL) Loan to Deposit Ratio (LDR) - Good Corporate Governance (GCG) - Earnings: Return On Asset (ROA) - Capital: Capital Adequacy Ratio (CAR) 	Very Healthy rating with a composite rating of 1.60. This indicates good asset quality, prudent risk management, strong earnings growth, and adequate capitalization. The bank has strong stability and performance, confirming its solid foundation in the banking industry. shows the RBBR method is effective in analyzing the health level of banks.
3	<p>Susilowati, W. C., Kristianto, D., & Harimurti, F. (2019).</p> <p>Altman Z-Score Analysis to Predict Bankruptcy in Islamic Public Banking in 2013 - 2017</p>	<p>Independent variable (X): Working capital to total asset ratio, retained earnings to total asset ratio, earnings before interest and taxes to total asset ratio, Book Value of Equity to Book Value of Liabilities.</p> <p>Dependent variable (Y): Bankruptcy</p>	This study concludes that from 2013 to 2017, the average Z-Score value of Islamic Commercial Banks is above 2.60, in accordance with the criteria of the modified Z-Score model which indicates that Islamic Banking is not Bankrupt. The modified Altman Z-Score model can effectively predict the financial condition of Islamic commercial Banks in Indonesia, along with the fact that no Islamic Banks experienced Bankruptcy in that period.
4	<p>Daryanto, W. M., & Meiliawati, P. T. (2022).</p> <p>The Effects of Risk Based Bank Rating on Stock Return</p>	<p>Independent Variable: The Risk-Based Bank Rating (RBBR)</p>	The study assesses the capital factor of public listed book-IV Banks as healthy, with Danamon having the highest CAR and BNI having the

	During Covid-19 Of BUKU IV Banks in Indonesia	Dependent variable: Stock Return	lowest. Capital resilience in the Banking sector is solid, with adequate liquidity conditions, but decreased profitability. Multiple linear regression analysis reveals that NPL, LDR, ROA, NIM, and CAR have a simultaneous positive effect on stock prices in 8 Banks.
5	Syafri, H., & Daryanto, W. M. (2019). Sharia Banking in Indonesia: What Went Wrong?	CAR, Asset Quality, management, Earnings, Liquidity.	Sharia Banks have lower financial performance compared to Conventional Banks, with lower retained earnings and higher NPF Gross ratios. Conventional Banks maintain efficiency levels, while Sharia Banks struggle with cost income ratios and earning ability. Both maintain liquidity, but Sharia Banks face inherent risks, such as credit risks, necessitating attention to capital adequacy.

Figure 7: Previous Research (source: multiple reference)

3.2. Research Framework

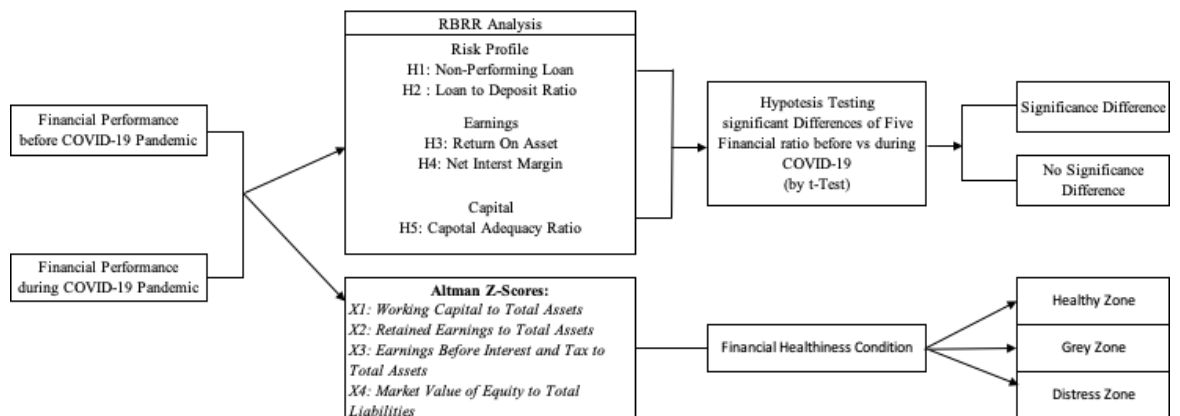


Figure 8: Research Framework, 2024

Figure 8 shows the research framework that is carried out in this study. The research framework consists of two variables which are financial performance to assess RBBR analysis and Altman Z Score to assess financial healthiness. Financial performance includes Non-Performing Loan, Loan Deposit Ratio, Return on Assets, Net Interest Margin and Capital Adequacy Ratio compared before and during the COVID-19 pandemic.

3.2.1. Distribution Normality Test

A normality test is a statistical test used to determine whether sample data comes from a normally distributed population (or close to normal distribution). Shapiro-Wilk test is recommended for data samples of up to 50 subjects, while the D'Agostino & Pearson omnibus normality test should be applied for samples with more than 50 values (Ester et al., 2023). This research used the Shapiro-Wilk test and SPSS software to ease the calculation. Criteria to interpret the assessment result: the Shapiro-Wilk test; Referring to the hypothesis below ($\alpha = 0.05$):

H_0 = data are normally distributed.

H_A = data are not normally distributed.

H_0 is rejected if the p-value < 0.05 , to conclude that the samples are not normally distributed.

3.2.2. Hypothesis Test

3.2.2.1. Paired t-Test

A paired t-test is a statistical method used to determine the difference between two groups or conditions. The null hypothesis

(H₀) assumes no difference, while the alternative hypothesis (H_A) suggests a significant difference.

The null hypothesis ($\delta_1 = 0$) is rejected, indicating no significant difference, while if the p-value is less than the predetermined significance level ($\alpha = 0.05$), the alternative hypothesis is accepted.

Criteria that will be used to measure the hypothesis of this study:

- If $p < 0.05$, H₀ is rejected, which means there is a significant difference in the financial ratio before and during COVID-19 pandemic.
- If $p > 0.05$, H₀ is accepted, which means there is no significant difference in the financial ratio before and during COVID-19 pandemic.

There were five hypotheses (H₁ to H₅) examined by this method: whether any difference before and during COVID-19 pandemic on the financial ratios of Non-Performing Loan, Loan Deposit Ratio, Return on Assets, Net Interest Margin and Capital Adequacy Ratio.

3.2.2.2. Wilcoxon Signed Rank Test

According to Laerd Statistic, 2018 The Wilcoxon signed-rank test is the nonparametric test equivalent to the dependent t-test. As the Wilcoxon signed-rank test does not assume normality in the data, it can be used when this assumption has been violated and the use of

the dependent t-test is inappropriate. It is used to compare two sets of scores collected from the same people.

3.2.3.Risk-Based Bank Rating

In accordance with the provisions in POJK No. 4/POJK.03/2016, through the bank health assessment, a composite rating will be generated which is presented in a table to provide a clear picture of the bank's health condition.

Table 6: Bank Health Level Composite Rating

Composite Rating	Description
1	The bank is categorized as being in a “ Very Healthy ” condition where the bank is capable of the negative impact of the economic situation and the financial sector.
2	The bank is in a " Healthy " condition where it could cope with the negative impact of the economic situation and financial sector. the negative impact of the economic situation and the financial sector, although there are still some weaknesses that can be corrected immediately.
3	The bank is in a " Quite healthy " condition, but there are weaknesses that could potentially deteriorate its overall rating if not addressed immediately.
4	The bank is in a " Less healthy " condition with significant financial weaknesses. significant financial weaknesses. If no immediate corrective action is taken, this condition could potentially threaten the banks. This condition has the potential to threaten the bank's business continuity.
5	The bank is in an " Unhealthy " condition with its inability to cope with the negative effects of economic conditions, and the financial industry is also experiencing difficulties that could potentially jeopardize its business continuity.

source: SAL SEOJK Nomor 14/SEOJK.03/2017

Bank Health Level Composite Rating The formula used in conducting descriptive analysis of this data is the calculation of the mean, which can

describe the average value of each financial ratio indicator used to analyze the health level of banks. Using the formula:

$$\text{Mean} = \frac{\text{the sum of all values}}{\text{the amount of data}}$$

3.2.1.1 Risk Profile

According to Bank Indonesia Regulation No. 13/1/PBI/2011, a risk profile includes an assessment of inherent risk and the quality of risk management implementation in bank operations, which includes eight main risks: credit, market, liquidity, operational, legal, strategic, compliance, and reputation risks. This study uses Non-Performing Loan (NPL) ratio and Loan to Deposit Ratio (LDR) ratio to measure credit risk and liquidity risk, respectively.

$$\text{Risk Profile} = \frac{\text{Non-Performing Loan (NPL)}}{\text{Loan to Deposit Ratio (LDR)}}$$

3.2.1.2. Earning

Bank Indonesia's Circular Letter No. 13/24/DPNP 2011 outlines profitability assessment, focusing on earnings performance, sources, sustainability, and management, using Return on Assets and Net Interest Margin.

Return on Asset Formula:

$$\text{ROA} = \frac{\text{Earnings Before Taxes}}{\text{Total Asset}} \times 100\%$$

Net Interest Margin Formula:

$$\text{NIM} = \frac{\text{Net Interest Income}}{\text{Productive Asset}} \times 100\%$$

3.2.1.3. Capital

Capital assessment is based on Bank Indonesia's Capital Adequacy Ratio. The greater the CAR, the better the bank's ability to manage the risk of loss.

Capital Adequacy ratio Formula:

$$\text{CAR} = \frac{\text{Tier 1 capital} + \text{Tier 2 capital}}{\text{Risk weight exposure}} \times 100\%$$

3.2.2. Altman Z-Score

According to Susilowati, W. C., Kristianto, D., & Harimurti, F., (2019) Altman's modified Z-score model eliminates variable X5 (sales to total assets) because non-manufacturing companies do not have sales accounts and vary greatly in industries with different asset sizes.

The X5 value describes the assets turnover whose philosophy is to understand how efficiently the assets owned can provide income. In service companies, fixed assets are usually not directly related to revenue. For example, if a company adds one office, its revenue will not automatically increase. This is the case with manufacturing companies. If the machine capacity is increased by X%, the revenue will increase by X%. Therefore, in manufacturing companies, the value of assets turnover often does not provide meaningful information (Sagho, M. F., & Merkusiwati, N. K. L. A., 2015).

To analyze banking institutions, the modified Z-Score model is used, the formula is as follow:

Altman Z-Scores Formula:

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

- a. X1: Working Capital/ Total Asset
- b. X2: Retained Earning/ Total Asset
- c. X3: Earning Before Tax/ Total Asset
- d. X4: Book Value of Equity/ Book Value of Debt

According to Altman and Hotchkiss (1993), score above 2.9 on Z-Score indicates that the financial performance of the company is in the healthy zone. Score between 1.23 and 2.9 indicate that the company performance financially is in the grey zone. Moreover, score below 1.23 means that the company is in the distress zone.

REFERENCES

- Altman, E. I., & Hotchkiss, E. (1993). Corporate financial distress and bankruptcy (Vol. 1998, pp. 105-110). New York: John Wiley & Sons.
- Ambarita, A. S., & Tristiarto, Y. (2024). Analisis Tingkat Kesehatan PT. Bank Pembangunan Daerah Jawa Barat dan Banten, Tbk dengan Metode Risk Based Bank Rating (RBBR). *Journal of Young Entrepreneurs*, 3(1).
- Andini Nurwulandari, Hasanudin Hasanudin, Bambang Subiyanto & Yulia Catur Pratiwi (2022) Risk Based Bank rating and financial performance of Indonesian commercial Banks with GCG as intervening variable, *Cogent Economics & Finance*, 10:1, 2127486.
- Bank Indonesia Circular Letter No. 13/24/DPNP/2011
- Brigham, E. F., dan Daves, P. R. 2013. *Intermediate Financial Management Eleventh Edition United States of America*, Thomson-South Western.
- Brown, A., & Ronen, J. (2013). Justifications for audits of financial statements. In *Handbook of key global financial markets, institutions, and infrastructure* (pp. 345–356). Academic Press
- Daryanto, W. M. (2022). The Impacts of Risk-Based Bank Rating (RBBR) Ratios on Stock Return of BUKU III Banks Listed on The Indonesia Stock Exchange, 2011-2020. *Jurnal Manajemen Teknologi*, 21(2), 219-233.
- Daryanto, W. M., & Meiliawati, P. T. (2022). The Effects of Risk Based Bank Rating on Stock Return During Covid-19 Of BUKU IV Banks in Indonesia. *Amwaluna: Jurnal Ekonomi dan Keuangan Syariah*, 6(1), 181-200.
- Ester, Manik., Azhar, Affandi., Sidik, Priadana., Dedi, Hadian., Dyah, Ayu, Puspitaningrum. (2023). Comparison of normality testing with chi quadrat calculations and tables for the statistical value departement of elementary

- school education student at the University of Jember. Nucleation and Atmospheric Aerosols, doi: 10.1063/5.0111307
- Ferrari, W., & Daryanto, W. M. The Effects of Risk-Based Bank Rating on Stock Return: Evidence of Buku Ii Banks in Indonesia.
- Laerd Statistic, (2018). Wilcoxon Signed-Rank Test using SPSS Statistics https://statistics-laerd-com.translate.google/spss-tutorials/wilcoxon-signed-rank-test-using-spss-statistics.php?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=tc
- Melati, W.P., (2023, Apr 12). Pandemi Covid-19 Dan Menurunnya Perekonomian Indonesia. <https://www.djkn.kemenkeu.go.id/artikel/baca/16064/Pandemi-Covid-19-Dan-Menurunnya-Perekonomian-Indonesia.html>
- Mitchell, W. C. (1925). Quantitative analysis in economic theory. *The American Economic Review*, 15(1), 1-12.
- Nasution, D. A. D., Erlina, E., Muda, I. (2020). Dampak pandemi covid-19 terhadap perekonomian Indonesia. *Jurnal Benefita*, 5(2), 212-223. <http://doi.org/10.22216/jbe.v5i2.5313>
- Peraturan Otoritas Jasa Keuangan No. 55/POJK.03/2016 Tentang Penerapan Tata Kelola bagi Bank Umum.
- PT Bank Pembangunan Daerah Jawa Barat dan Banten. (2023). Company Profile Bank bjb. <https://www.bankbjb.co.id/files/2023/03/company-profile-bank-bjb-2023-final.pdf>
- PT Bank Pembangunan Daerah Jawa Timur. (2023). Company Profile Bank Jatim. https://www.bankjatim.co.id/files/iru/bahan_rups/laporan_tahunan/2023/ar_2023_bjtm_ind.pdf
- Sagho, M. F., & Merkusiwati, N. K. L. A. (2015). Penggunaan Metode Altman Z-Score Modifikasi Untuk Memprediksi Kebangkrutan Bank Yang Terdaftar Di Bursa Efek Indonesia. *E-Jurnal Akuntansi Universitas Udayana*, 11(3), 730-742.

- Subagyo, I. I., Achsani, N. A., & Sasongko, H. (2022). Understanding The Effects of Bank Rating on Stock Return in Indonesia. *International Journal of Finance & Banking Studies* (2147-4486), 11(4), 24-36.
- Sugiyono. 2010. *Metodologi Penelitian*. Bandung: Alfabeta.
- Surat Edaran Otoritas Jasa Keuangan No. 14/SEOJK.03/2017 Tentang Penilaian Tingkat Kesehatan Bank Umum.
- Suryani, Y., & Habibie, A. (2017). Analisis Pengaruh Rasio–Rasio Risk Based Bank Rating Terhadap Pertumbuhan Laba Pada Perusahaan PerBankan yang Terdaftar di BEI. *KITABAH: Jurnal Akuntansi dan Keuangan Syariah*, 1(1).
- Susilowati, W. C., Kristianto, D., & Harimurti, F. (2019). Analisis Altman Z-Score Untuk Memprediksi Kebangkrutan Pada PerBankan Umum Syariah Tahun 2013–2017. *Jurnal Akuntansi dan Sistem Teknologi Informasi*, 15(4).
- Syafril, H., & Daryanto, W. M. (2019). SHARIA BANKING IN INDONESIA: WHAT WENT WRONG? *Southeast Asia Journal of Contemporary Business, Economics and Law*, 20(1), 45-57.
- Theodorus, S., & Artini, L. G. S. (2018). *Studi Financial Distress Pada Perusahaan PerBankan Di Bei* (Doctoral dissertation, Udayana University).
- Van Greuning, H., & Iqbal, Z. (2011). Analisis risiko perbankan syariah. *Jakarta: Salemba Empat*.
- World Health Organization 2023 data.who.int, WHO Coronavirus (COVID-19 dashboard > cases [Dashboard].
<https://data.who.int/dashboards/covid19/cases?n=c>

