

T.R.
ISTANBUL SABAHAATTIN ZAIM UNIVERSITY
GRADUATE EDUCATION INSTITUTE
DEPARTMENT OF ISLAMIC ECONOMICS AND FINANCE

**THE COMPARISON OF EFFICIENCY AND
SOUNDNESS OF PRE-AND POST-MERGER OF
ISLAMIC BANKS: THE CASE OF THREE ISLAMIC
BANKS IN INDONESIA**

MA THESIS

Antoni JULIAN

Istanbul

July-2024

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DECLARATION OF SCIENTIFIC AND ETHICS ORIGINALITY

This is to certify that this MA thesis titled “*The Comparison of Efficiency and Soundness of Pre- and Post-Merger of Islamic Banks: The Case of Three Islamic Banks in Indonesia*” is my work and I have acted according to scientific ethics and academic rules while producing it. I have collected and used all information and data according to scientific ethics and guidelines on thesis writing at Istanbul Sabahattin Zaim University. I have fully referenced, in both the text and bibliography, all direct and indirect quotations and all sources I have used in this work.



Antoni JULIAN

Istanbul, July 2024

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ABSTRACT

THE COMPARISON OF EFFICIENCY AND SOUNDNESS OF PRE-AND POST-MERGER OF ISLAMIC BANKS: THE CASE OF THREE ISLAMIC BANKS IN INDONESIA

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Indonesia state-owned enterprises merged three Islamic banks namely BRI Syariah, BNI Syariah and Bank Mandiri Syariah into Bank Syariah Indonesia. This merger is an attempt to overcome the problems faced by Islamic banking including limited capital, a high cost of funds, and the condition of Islamic banking, which generally experiences excess liquidity. Therefore, this study aims to analyse the efficiency and soundness of pre- and post-merger as well as compare efficiency and soundness condition of pre-and post-merger. Furthermore, data used is data taken from Financial Services Authority and financial statements of banks pre-and post-the merger from the period of 2017 to 2022. As for data are analysed by data envelopment analysis for the bank efficiency, while the bank soundness is analysed by risk profile, good corporate governance, earning, and capital (RGEC) method. The findings show that Banks pre-merger have three inefficiency conditions in the second quarter of 2017 as well as 2018 and the third quarter of 2019. Meanwhile, Bank post-merger has two inefficiency condition in third quarter of 2020 with an efficiency value of 0.99 and in the fourth quarter of 2021 with an efficiency value of 0.98. Hence, the result of comparison test on efficiency between Islamic banks before and after the merger, it is found that bank after the merger had better efficiency. The study finds that the soundness of the banks before and after the merger refers to their health condition. Furthermore, the study finds that there is a circumstantial difference in banks' soundness pre- and post-merger.

Keywords: Efficiency, Soundness, Islamic banking, RGEC Method, Data Envelopment Analysis

ÖZET

BİRLEŞME ÖNCESİ VE SONRASI İSLAMİ BANKALARIN VERİMLİLİK VE SAĞLAMLIK KARŞILAŞTIRMASI: ENDONEZYA'DAKİ ÜÇ İSLAMİ BANKA ÖRNEĞİ

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Endonezya, kamu iktisadi teşebbüsleri BRI Syariah, BNI Syariah ve Bank Mandiri Syariah adlı üç İslami bankayı Bank Syariah Indonesia adı altında birleştirmiştir. Bu birleşme, sınırlı sermaye, yüksek fon maliyeti ve genellikle aşırı likidite yaşayan İslami bankacılığın durumu gibi, İslami bankacılığın karşılaştığı sorunların üstesinden gelme girişimidir. Bu nedenle, bu çalışma birleşme öncesi ve sonrasının etkinliğini ve sağlamlığını analiz etmenin yanı sıra birleşme öncesi ve sonrasının etkinlik ve sağlamlık durumunu karşılaştırmayı amaçlamaktadır. Ayrıca, kullanılan veriler Mali Hizmetler Otoritesinden ve bankaların birleşme öncesi ve sonrası 2017-2022 dönemine ait mali tablolarından alınmıştır. Veriler banka etkinliği için veri zarflama analizi ile analiz edilirken; banka sağlamlığı risk profili, iyi kurumsal yönetim, kazanç ve sermaye (RGEC) yöntemi ile analiz edilmiştir. Bulgular, birleşme öncesi bankaların 2017'nin ikinci çeyreğinde, 2018'de ve 2019'un üçüncü çeyreğinde üç etkinsizlik durumuna sahip olduğunu göstermektedir. Birleşme sonrası bankalar ise 2020'nin üçüncü çeyreğinde 0,99 ve 2021'in dördüncü çeyreğinde 0,98 etkinlik değeriyle iki etkinsizlik koşuluna sahiptir. Dolayısıyla, birleşme öncesi ve sonrası İslami bankalar arasındaki etkinlik karşılaştırma testi sonucunda, birleşme sonrası bankaların daha iyi etkinliğe sahip olduğu bulunmuştur. Çalışma, birleşme öncesi ve sonrası bankaların sağlamlığının sağlık durumlarını ifade ettiğini bulmuştur. Ayrıca, çalışma bankaların birleşme öncesi ve sonrası sağlamlıklarında dolaylı bir fark olduğunu bulmuştur.

Anahtar Kelimeler: Etkinlik, Sağlamlık, İslami Bankacılık, RGEC Yöntemi, Veri Zarflama Analizi

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LIST OF ABBREVIATIONS

BRI: Bank Rakyat Indonesia

BNI: Bank Negara Indonesia

BMS: Bank Mandiri Syariah

BSI: Bank Syariah Indonesia

FDR: Financing to Deposit Ratio

NOM: Net Operating Margin

ROA: Return on Assets

NPF: Non-Performing Financing

CAR: Capital Adequacy Ratio

GCG: Good Corporate Governance

OJK: Otoritas Jasa Keuangan

BI: Bank Indonesia

RGEC: Risk Profile, Good Corporate Governance, Earning, and Capital

DEA: Data Envelopment Analysis

CRV: Constant Returns to Scale

VRS: Variable Returns to Scale

DMU: Decision Making Unit

BUMN: Badan Usaha Milik Negara

SFA: Stochastic Frontier Analysis

CAMEL: Capital, Asset Management, Earnings, Liquidity, Sensitivity

BOPO: Beban Operasional dan Pendapatan Operasional/operating expenses to operating income

OJK: financial services authority

CHAPTER I

INTRODUCTION

The development journey of Islamic banks in Indonesia since the post-establishment of Muamalat Bank has lasted approximately 30 years. The journey of development can be divided into two parts: namely, creating a legal foundation through issuing laws to support the creation of a conducive environment for Islamic bank growth. As per the law, number 7/1992, a bank could operate the business without interest, but it was operated by a partnership and a profit-loss sharing system. Furthermore, the laws, number 10, 1998, state that conventional banks could release Islamic windows by establishing a syariah business unit, and because of the law, Indonesia operates a dual banking system (Rachman, A, et.al., 2022).

Afterwards, the central bank of Indonesia introduced Islamic monetary instruments such as the Wadiah certificate and the sharia-based interbank money market in 1999. In addition, the central bank of Indonesia issued article number 8/3/2006 concerning office channelling, which facilitates sharia services to be more convenient. Conventional banks had sharia business units that could provide sharia services in branch offices, which was unnecessary to establish a new Islamic branch office (Suryani, 2012). The Islamic banking sector was encouraged to grow at a faster rate by the legislation of Number 21/2008 (Otoritas Jasa Keuangan, 2008), which consisted of seventy chapters. It is anticipated that the role of the Islamic banking industry in providing support to the national economy will become increasingly significant. In the early stages of the development of Islamic banking in Indonesia, the support of government regulations is a solid foundation for the future progress of Islamic banking.

Thus, by establishing a legal foundation for Islamic banking to encourage its faster growth, the government, in turn, seeks to increase the contribution of Islamic banking to the Indonesian economy. However, in this effort, Islamic banking faces several problems, including limited capital, a high cost of funds, and the condition of Islamic banking, which generally experiences excess liquidity. Limited capital is the main issue that inhibits the contribution of Islamic banks to expanding to finance business sectors such as the corporate sector, institutions, or government projects

that require large funds (Rulindo, 2019). On the other hand, conventional banks had a total capital that was up to 8.5 times larger than the capital of Islamic banking in 2018 (Rulindo, 2019). Hence, the potential of Islamic banking to contribute to the Indonesian economy is quite large based on the SWOT analysis. Existing opportunities, such as the level of ownership of Islamic bank accounts in the community, are still low, and the potential for large unrealised funding due to limited capital is an obstacle (Komite Nasional Ekonomi dan Keuangan Syariah, 2018).

According to stakeholders and analysts, the best way to overcome capital constraints caused by mergers and acquisitions of multiple Islamic state-owned banks is to create a large-scale bank. On February 1, 2021, the Indonesian president launched Bank Syariah Indonesia (BSI). BSI combines BRI Syariah, BSM, and BNI Syariah. On January 27, 2021, the OJK approved the three Islamic bank consolidations by letter SR-3/PB.1/2021. (Bank Syariah Indonesia, 2021). Following the merging of three Islamic banks, BSI has 16.17 billion US dollars in assets in 2021, 1785 ATMs, and over 14.9 million customers. Additionally, BSI has around 1.200 branch offices with 20,000 staff. With BSI, the Islamic banking industry hopes to contribute to sustainable economic growth and equitable development and enhance the sharia economy in Indonesia through Islamic banking products. (Gantès, 2021).

However, according to research findings by (Chowdury, et.al., 2014), mergers and acquisitions of Islamic banks have a negative effect on the long-term performance of Islamic banks. In addition, a study's finding describes that the bank merger could not improve the financial performance of the merger bank. (Khushalani, D. & Sinha, M., 2021). Indeed, based on the financial service authority report for Islamic bank development in Indonesia during 2022, Islamic bank development lends itself to a positive trend, even in the COVID-19 era. This describes that the merger effects on Islamic bank quality positively. This can be seen in the table below:

Table 1. 1: Indonesia Islamic Bank Growth Indicators In 2022 (In Billions of Dollars)

Indicators	Growth (YoY) in 2022		
	2021	2022	Growth (%)
Islamic Bank			
Total Assets	43.71	50.54	15.6%
Deposits	34.56	39.03	12.93%
Financing	26.58	31.87	19.93%

Source: Financial Service Authority

The table of growth indicators indicate an optimistic future for Islamic banks in Indonesia. The total of the Islamic banks deposit acceptance is growth by 12.93% in 2022. Moreover, it is also followed by growth in total asset of 15.6% and Islamic banking is Incredible at financing which increase by 19.93%. Hence, the growth illustrates that Indonesian Islamic banks have generally performed well after the merger.

Based on the above problem, research will be conducted to analyse the merger of three Islamic banks of Indonesia. Moreover, the study will evaluate circumstances of the three Islamic banks performance prior to and post-the merger. The research also assesses the success of the merger by comparing between both conditions pre-and post-the merger.

1.1. Statement of the Problem

The subject of the thesis is to evaluate and assess the merger of three Islamic banks in Indonesia. The merger of three Islamic banks become BSI was announced by the Ministry of State-Owned Enterprises on October 12, 2020, and was inaugurated officially by the president of Indonesia on February 1, 2021. The purpose of the merger is to tackle the problems faced by Islamic banks, such as limited capital, the high cost of funds, and the generally excessive liquidity of Islamic banking (Mutmainah, et.al., 2022). OJK, in the meantime, has a vision to realise Islamic banking that makes a substantial contribution to the achievement of sustainable economic growth, equitable development, and the stability of the financial development system, as well as to the achievement of highly competitiveness. However, according to (Chowdury, et.al., 2014) and (Khushalani, D. & Sinha, M., 2021), that the Islamic banks merger and acquisitions impact negatively to performance of Islamic bank and the merger could not improve the financial performance.

On the other hand, contradiction between two evaluations of efficiency, both studies conduct a comparative study between efficiency before and during the Covid-19 pandemic. According to study's finding of (Safira, K. & Aliludin, Arson, 2021) describes Indonesia's Islamic banks performed poorly both before and during the covid-19 pandemic, receiving scores of 68.12% and 69.64%, respectively. Meanwhile, study's finding of (Al'haq, 2022) shows that score of the efficiency

before the covid-19 by 95% almost closed to the maximum efficiency level and the efficiency score during the Covid-19 pandemic by 89%. Therefore, the difference in the results of (Safira, K. & Aliludin, Arson, 2021) and (Al'haq, 2022)'s bank efficiency research is a reason to retest the efficiency of Islamic banks in the range of 2017 to 2022.

1.2. The Rationale

For a country, maintaining bank performance is important. The bank has a relationship with the country's real sector and its impact on economic development. A bank functions as an intermediary institution that collects funds from wealthy individuals, groups, and commercial enterprises before distributing them to those in need. Furthermore, changes in the banking industry, such as the merger of Islamic Bank, will definitely impact the nation's economy. Therefore, the problem of this thesis is whether the three merged Islamic banks have improved in terms of efficiency and soundness after merging.

Efficiency is one of the measurements used to investigate bank performance. There are three ways to measure efficiency: by maximisation of output, minimisation of cost, and maximisation of profits. Meanwhile, Anik and Suhesti (2020) define the assessment of bank soundness as an evaluation of a bank's ability to conduct banking operations smoothly and meet all its commitments in compliance with banking legislation. In addition, both measurements have been widely used to investigate banking performance; therefore, both measurements evaluate and assess the merger of three Islamic banks in Indonesia, especially their condition pre- and post-merger.

1.3. The Limitations and Significance

The subject of the thesis is evaluation of the impact of three Islamic banks that are merged, consisting of public company of BRI Syariah, Bank Syariah Mandiri, and Bank BNI Syariah, then becoming the biggest Islamic bank at asset, namely Bank Syariah Indonesia. Furthermore, this study specifically assesses and evaluates the performance conditions, namely efficiency and soundness, of the three Islamic banks from 2017 to 2020 and the Bank Syariah Indonesia from 2021 to 2022. Moreover, the main significance of this study is to determine whether the three Islamic banks merger policy is successful or unsuccessful by comparing the pre- and

post-merger conditions of the three Islamic banks based on their efficiency and soundness.

1.4. The Research Questions

Based on the issues of the thesis, this thesis focuses on the evaluation and assessment of the performance of the merger of three Islamic banks post- and pre-merger. Hence, the study is research having two research questions is:

- 1) How are the efficiency and soundness of three Islamic banks pre- and post-merger?
- 2) How are differences of efficiency and soundness conditions of three Islamic banks pre- and post-merger?

1.5. Hypotheses

Hence, to find out the answer to the first question, the thesis will evaluate the three Islamic banks' efficiency by using DEA. DEA is a method used to evaluate the efficiency of a DMU in its ability to utilise multiple inputs to achieve a desired output. DEA is also a non-parametric, non-statistical, or mathematical programming technique for considering efficiency, and it uses the intermediation approach for banking. The input variables for the intermediation approach comprise bank-collectible deposits, including but not limited to the Wadiah deposit, Mudharabah deposit, and Musyarakah, as well as additional operational expenses. Furthermore, current assets, financing (including Musyarakah and Mudharabah financing), and other operational income comprise the output variables. DEA is a method for evaluating the performance of a DMU in generating an objective result by combining multiple inputs.

And study will use approach methods namely RGEC method to evaluate the soundness level according to BI circular letter no. 15/15/DPNP issued on April 29, 2013, RGEC approach is used to analyse the soundness of the bank in detail. The approach assists the commercial bank in identifying problems early by carrying out assessments based on risk management and the good corporate governance of Islamic banks. The study will use NPF and FDR to determine the risk profile, ROA, NOM, and BOPO to determine earnings and using CAR to determine Capital.

Furthermore, to answer the second question, the study will use a statistical analysis namely Wilcoxon Rank Test for the comparison test with software SPSS27.

According to Hayes (2023) Wilcoxon Rank Test is a non-parametric statistical technique that compares two matched groups that were evaluated under various conditions in order to extract differences from both groups. The Wilcoxon technique will examine efficiency and soundness scores between three Islamic banks pre- and post-merger. There is a hypothesis that our thesis develops depending on the second question it is investigating:

H_0 = there is not a difference in the efficiency and soundness condition of three Islamic banks pre- and post-merger.

H_a = there is a difference in the efficiency and soundness condition of three Islamic banks pre- and post-merger.

1.6. The Research Method

In this context, the research will be conducted in two stages utilizing quantitative method. In the first stage, the study aims to evaluate the three Islamic banks efficiency and soundness pre- and post-merger. At this stage, the focus on the Islamic bank efficiency evaluation is carried out by DEA, which is a non-parametric efficiency analysis technique using Microsoft Excel and DEAP 2.1. and the soundness level of Islamic bank will be evaluated by RGEC using Microsoft Excel. The monthly/quarterly financial statements available on the primary web page of the "Financial Services Authority" in Indonesia, as well as those of the three Islamic banks prior to the merger and Bank Syariah Indonesia post-merger, were used to gather the secondary data for this study.

In the second stage, the study conducts the comparison analysis utilizes statistical test by Wilcoxon difference test using SPSS 27, the test compares the efficiency score of the three Islamic banks between condition pre-merger with post-merger as well as comparing the soundness result of three Islamic bank between condition pre-merger with post-merger. Therefore, the study determines the success of merger policy of the Ministry of State-Owned Enterprises (BUMN) based on comparing result of the efficiency and the soundness of the three Islamic banks pre- and post-merger.

1.7. The Originality and Importance of the Thesis

The most important thing that adds value to the originality of the research is this research attempts to evaluate the three Islamic bank merger policy with analysing

circumstance pre- and post- merger based on the efficiency and the soundness of the three Islamic banks. the thesis can provide a clear description of the merger policy impact to efficiency and soundness of the three Islamic banks. Some research which study regarding the soundness of Islamic bank, such as (Al'haq, 2022) and the efficiency of Islamic bank, such as (Panorama, 2018). This study also aims to consider the success of merger policy by comparing the performance condition of the three Islamic banks pre- and post-merger. Therefore, the study also has the first and original contribution features because it simultaneously evaluates circumstances of the three Islamic banks and comparing circumstances of the three Islamic banks pre- and post-merger.

1.8. Design of the Thesis

The thesis consists of 5 chapters. The first chapter is an introduction part which consists of background of research, the rationale of the study, the limitation and significance of the study, the research question, the hypotheses, the research method, the original and importance of the thesis, and design of the thesis.

The second chapter discusses general discussion and approaches to the evaluation on banking industry and related literature review to establish a theoretical framework. In this context, this part will focus on sections related to bank mergers, efficiency, Data Envelopment Analysis, and soundness measurement by RGEC approach.

The third chapter will discuss the research methodology used in this research. With a sub-discussion on the type of research, data sources, tools, methods, and data analysis techniques. This chapter will specifically calculate the statistical analysis of the existing data in order to obtain evaluation of the effectiveness and the soundness of the three Islamic banks.

The fourth chapter will discuss the analysis of data variables related to the efficiency and the soundness of the three Islamic banks. This chapter will determine efficiency and soundness condition of the three Islamic banks between pre- and post-merger.

In the last chapter, it will be discussed based on the data obtained in fourth chapter that has been determined regarding the efficiency and the soundness of the three Islamic banks. In this chapter, the study will compare the efficiency and the soundness circumstances of the three Islamic banks pre- and post-merger deeply and comprehensively

CHAPTER II

LITERATURE REVIEW & THEORETICAL FRAMEWORK

2.1. Introduction

A review of the literature on bank mergers, bank soundness, and bank efficiency in relation to this argument is included in this chapter. The theoretical foundation for efficiency and soundness as well as the measurement strategy for efficiency and soundness are then covered in this chapter.

2.2. Merger and Acquisition: Definition

In linguistically, word of merger could be found in dictionaries, such as is in English dictionary namely Cambridge, merger is described as a situation that takes place when two or more businesses or organisations come together to form a single larger entity (Cambridge, 2023). As for Indonesia dictionary, merger is the amalgamation of two or more companies under one ownership (Kamus Besar Bahasa Indonesia, 2024). Hence, merger is a linguistic term found in dictionaries like Cambridge and Indonesia Dictionary, where it refers to the amalgamation of two or more businesses or organizations to form a single larger entity.

As for, acquisition in linguistic, according to English dictionary such as Cambridge, acquisition is something like a building, another company, or a piece of land that is purchased by a company, or the process of purchasing it, is an example of a good or service (Cambridge, 2023). Meanwhile, another dictionary such as Indonesia dictionary describes that transfer of ownership of a business, or its assets is called an acquisition. In the banking industry, this happens when more than 50% of shares are bought. Acquisition, therefore, refers to the transfer of ownership of a business or its assets by purchasing it.

As Majluf (1996) explains, the concept of "merger and acquisition" refers to the strategic process of establishing organisational goals through long-term objectives, action programmes, and resource allocation. One significant challenge encountered by corporations aiming to merge or buy other companies is determining the specific business sectors in which the company should engage to optimise its long-term financial performance. (Kumar, 2009) defines a merger as the consolidation of two

organisations of comparable magnitude to establish a unified company. Mergers require a compatible reorganisation of assets and resources for the companies participating in the amalgamation. Therefore, A merger is the consolidation of two or more organisations of comparable magnitude to establish a unified company, requiring a compatible reorganisation of assets and resources for the companies participating in the amalgamation and aiming to optimise long-term financial performance.

2.3. Literature Review of Three Islamic Banks' Merger

Many studies have focused on analysing as well as evaluating of the three Islamic banks merger. This study divides the research about the three Islamic banks merger into two types. The studies analyse the merger impact of three Islamic banks on Indonesia economy and Islamic bank development, as conducted by (Saputra, E. S. and Sissah, 2021) (Syahputra, 2021). Most studies analyse the three Islamic banks merger based on analysis strengths, weaknesses, opportunities, and threats (SWOT), as conducted by (Aransyah, 2021) (Mutmainah, et.al., 2022). However, both studies are limited to impact and growth possibilities of three Islamic banks, meanwhile, analysing comparison of the performance of the three Islamic banks before and after the merger has not yet been conducted in order to know whether the merger policy is success or failure. A study conducted by (Khushalani, D. & Sinha, M., 2021) analysed the financial outcomes of four banks that went through a merger in India, both before and after the merger. The study observations indicate that the bank merger did not improve the financial condition of the merged bank.

2.3.1. Empirical Studies on Efficiency and Soundness

Furthermore, the performance evaluation of banks could be measured from the efficiency and soundness of the bank. Several empirical studies have focused on the evaluation and assessment for the bank efficiency, for instance, a study carried out by (Safira, K. & Aliludin, Arson, 2021) examines the efficiency of Islamic banking in Indonesia before as well as during the challenging times of the covid-19 pandemic. The study aims to determine the implications of the covid-19 epidemic on the Islamic banking sector. Thus, this study also examines the efficiency conditions before and after the Covid-19 epidemic. The efficiency measurement in this study utilises the data envelopment analysis method, specifically an aspect of the return to

scale framework using an output-oriented strategy. The four factors used are funds from third parties with all of their assets for the input and finance with operational revenue as the output. The study utilises the Kolmogorov-Smirnov and Mann-Whitney U tests to compare the efficiency condition before and throughout the COVID-19 pandemic. The report examines 13 Islamic banks throughout the period from 2019 to 2021. The study's findings indicate that Indonesia's Islamic banks had subpar performance both prior to and during the covid-19 outbreak, with scores of 68.12% and 69.64% respectively. Moreover, the correlation study using the Mann-Whitney U test result indicates that there is no noticeable disparity in the efficiency score prior to and throughout the COVID-19 pandemic. Therefore, it can be concluded that the covid-19 epidemic did not affect the efficiency of Indonesia's Islamic banking system.

Then a study that is almost the same as of (Safira, K. & Aliludin, Arson, 2021). This study is the possession of (Al'haq, 2022) which analyses the efficiency of commercial Islamic bank by the DEA method with intermediation approach and comparing the efficiency condition prior to and throughout the COVID-19 pandemic. As part of the analysis, this study utilises the Wilcoxon differential test for comparison. Two Islamic banks, namely the Islamic Bank of Aceh and the Islamic Bank of West Nusa Tenggara, were used as samples for this study. During the COVID-19 pandemic, the average efficiency value of Islamic Commercial Banks dropped by 6.9% compared to the pre-pandemic condition.

The study undertaken by (Erna, P. L. and Ade, S. M., 2018) investigate the effectiveness of Islamic banks in Indonesia and Pakistan. The study uses the data panel regression technique to investigate the factors that exert the most significant influence on the level of efficiency of the variables under examination. This analysis utilises four samples of Islamic data from both nations, collected between 2012 and 2016. The data is examined using the DEA method, assuming CRS, VRS, and scale efficiency. The study reveals that fully established Islamic banks in Indonesia demonstrate greater efficiency compared to fully established Islamic banks in Pakistan, as per the assumptions of CRV, VRS, and scale efficiency. However, there is no substantial disparity in the efficiency values between the two. Furthermore, our analysis of the available samples indicates that deposits have the greatest impact on efficiency value, with finance being the second most influential factor.

A study conducted by Novitasari et al. (2021) employed the DEA approach to assess the efficiency of Islamic banks in Indonesia between 2015 and 2019. The study covers a population of 189 banks, consisting of 14 Islamic Commercial Banks, 20 Islamic Business Units, and 164 Financing of Islamic Rural Banks. Afterwards, the study examined a sample of six Islamic banks, including Indonesia Muamalat bank, Islamic Mandiri bank, Islamic Mega bank, Islamic Indonesia people's bank, Islamic Bukopin bank, and Islamic state bank of Indonesia. The banks were chosen after considering various factors. Throughout the observation period, the study found that the efficiency of Islamic Commercial banks in Indonesia showed fluctuations. In 2015, 2016, 2017, 2018, and 2019, the efficiency levels were 86.9%, 93.3%, 97.2%, 87.8%, and 93.6% respectively. By optimising the input and output of each Islamic bank according to the desired targets, the study found that efficiency levels can be significantly improved. Ensuring the seamless achievement of input and output goals at a 100% rate is crucial.

Besides that, a study conducted by (Putri, D. A. & Rusmita, S. A. , 2020) was nearly the same analysed the efficiency of Islamic Bank for the 2015–2018 period. However, the study used a different approach to analyse the efficiency, namely stochastic frontier analysis (SFA), which is a parametric test, whereas the data was tested only on data of normal distribution. Moreover, the study used 7 samples of Islamic commercial banks. The study found that Islamic banks' average efficiency was 95.92%, with a cost efficiency of 4.07% between 2015 and 2018. Hence, both studies reveal that the level of efficiency of Islamic banks before merger is outstanding according to both assessments of efficiency, such as DEA and SFA.

This study thoroughly examines a wide range of studies that are closely linked to the assessment of stability. A study conducted by (Nabila A. Z. M., et.al., 2022) examined the financial stability of three Islamic banks in Indonesia before their merger. This study employs a qualitative methodology. The research also makes use of secondary data that was taken from the 2016–2019 financial statements of three Islamic banks. Next, we analyse the data using the RGEC technique, which helps us assess the Risk Profile, Good Corporate Governance, Earnings, and Capital. Based on the RGEC approach, it can be concluded that BNI Syariah, BRI Syariah, and Bank Mandiri Syariah are considered to be in good financial health.

(Sari, D. N., et.al., 2022) evaluate the soundness level of Indonesia Islamic bank in 2021 by Capital, Asset, Management, Earning, and Liquidity (CAMEL) method. Moreover, to determine CAMEL method several variables used namely capital adequacy ratio (CAR) for capital parameter, earning asset quality for asset parameter, net profit margin for management measure, ROA and ROE for earning measure, FDR for liquidity parameter. As result of the study shows that score obtained for CAR is significantly above 8% so it is good. In terms of asset quality, the score obtained is 11.80%. In the management aspect, Indonesian Islamic Bank performance uses the bank resources efficiently. In the earning aspect, ROA's score of 1.61% and ROE's score of 13.71%. In term of liquidity, financing deposit ratio's score obtain 73.39%. Therefore, BSI's performance in 2021 was rated as healthy, indicating the BSI's ability to withstand adverse effects from its external environment as well as economic turbulence.

(Nabila, S., et.al., 2022) assesses the soundness of Islamic Commercial banks during 2020 with RGEC approach. This study evaluates 11 Islamic banks as sample and observing the soundness during 2020 only. The result of the study shows the level of soundness of Islamic banks in risk profile of the NPF ratio with the predicate healthy and fixed deposit receipt fairly healthy. In Good corporate governance aspect, Islamic banks obtain an average healthy. In the earning aspect, the study used several measurements are such as BOPO ratio, return of assets and return of equity, whereas these measurements achieved fairly healthy. And, in the capital assessment, the study obtained healthy condition based on CAR ratio that was had by Islamic banks. Therefore, the soundness condition of Islamic banks during 2020 is healthy.

The study conducted by (Ramadhati, I. & Laila, N., 2020) is titled "Comparison Analysis of Soundness Level between Conventional Banks and Islamic Foreign Exchange Banks using the RGEC approach." The study includes a total of 22 banks, comprising 17 conventional foreign exchange banks and 5 Islamic foreign exchange banks. The analysis revealed considerable disparities between conventional and Islamic banks in terms of NPL, ROA, BOPO, and CAR. There are certain variables, such as the FDR, GCG, and ROE, that are not different between conventional and Islamic practices. Furthermore, the study demonstrated that the Islamic Foreign Exchange Banks outperformed the traditional foreign exchange banks in terms of variable FDR and GCG. However, the conventional foreign exchange bank

outperformed the Islamic foreign exchange bank in terms of metrics such as NPL, ROA, ROE, BOPO, and CAR.

Based on observation of the empirical studies, there are three significant gaps in this thesis of the study's result regarding the impact of the bank merger is negative impact and it could not improve the financial performance. Furthermore, there is a disparity in the findings of the study when examining the financial performance of Islamic banks in Indonesia pre- and throughout the COVID-19 outbreak. The absence of a thorough assessment of soundness by comparing the soundness criteria before and after the merger. Therefore, there is a need for a serious study to analysis the between all of the above-related matter in one research platform to obtain empirical analysis and description of the merger impact by the assessment of the efficiency and soundness of three Islamic banks between years 2017 – 2022 and comparison between both the pre- and post-merger.

2.4. Efficiency: Definition and Measurement

2.4.1. Definition of Efficiency

In history, Conventional economy efficiency theory was the first developed by Adam Smith in the 1700s (Said, 2012). Furthermore, according to English dictionary, such as Oxford dictionary, efficiency is the ability to complete a task properly and without wasting time or money (Oxford, 2023). Therefore, many businesses attempt to reach the efficiency. A business's efficiency is often defined as its ability to successfully produce as much of an output from a given set of inputs as possible (Makaran, 2022). Meanwhile, according to (Safira, K. & Aliludin, Arson, 2021), Efficiency is how much output is produced from the input used, is calculated by comparing input and output. Hence, if a business can produce more with the same input or use fewer inputs than other businesses while still producing the same amount of output, it can be deemed more efficient than others. This study concludes that efficiency is a condition whereas a business could manage a certain amount of input to produce an outcome that is worth more than the input.

2.4.2. The Components of Efficiency

There has been a significant amount of research conducted in the academic literature on the analysis of efficiency. In this section, we shall investigate the present-day concepts of efficiency. There are many different kinds of efficiency, such as cost

efficiency, technical efficiency, allocative efficiency, scale efficiency, profit efficiency, and productive efficiency.

a) Cost efficiency

Several ideas about cost efficiency. Cost efficiency in the context of banking firms, as discussed in the study, refers to the ability of a bank to minimize its costs given a certain level of output and quality of services (J. Maudos & J. M. Pastor, 2003). As for according to (Ariff, Mohamed & Luc, Can, 2008) the cost efficiency of a firm is achieved by minimising its costs to match those of the best-practice company that produces a similar number of outputs, which are then sold at specific prices in relation to the input costs.

However, according to (Urga, 2001), *“bank cost efficiency can be defined as the estimated cost required by a bank to create a vector of output, assuming that the bank's efficiency is equal to that of the best performing bank in the sample.”*

In addition, Cost efficiency is a metric that assesses a bank's ability to effectively use its resources in order to provide its services at the most economical cost. A bank is considered cost efficient when it is unable to decrease its existing level of output without compromising the quality of its services or output.

b) Technical Efficiency

As stated by (Wezel, 2010) technical efficiency (TE) is the capacity of a company to optimise output using a specific set of inputs or to minimise input usage for a given level of output. Technical efficiency, within the field of financial institutions and banking, often refers to a bank's capacity to optimise output or reduce the expenses based on a specific set of inputs (Deelchand, Tara & Padgett, Carol, 2010). As a result, TE is a measure of how well a firm uses its resources in the production process transform resources such as labour, money, and technology into outputs such as loans and financial services.

Technical efficiency is simply demonstrated when a firm operates at the production potential frontier, indicating that it cannot increase output without increasing inputs. If a firm is technically inefficient, it means that it operates below the frontier. This suggests that the firm has the capacity to utilise less

of at least one input to get the same level of output, or it could create more product with the same level of input (Wezel, 2010).

c) Allocative Efficiency (Price Efficiency)

Allocative efficiency is an economic concept that related to the optimal allocation of resources to maximise the overall benefit to society (Deelchand, Tara & Padgett, Carol, 2010). For a firm, allocative efficiency means producing the optimal mix of goods and services that consumers demand at prices that reflect the marginal cost of production. This ensures that the resources are used where they have the highest value, which is determined by the price consumers are willing to pay.

In the context of the banking sector, allocative efficiency would involve providing a mix of financial services, loans, and investments that best meet the needs of borrowers and depositors, while also reflecting the costs of providing these services (Deelchand, Tara & Padgett, Carol, 2010). As for according to (Isik, I. and Hassan, M. K., 2002) allocative efficiency would involve a bank allocating its capital and resources to investments or loans that provide the highest value to borrowers and the economy, while also considering the risk and return for the bank itself. This ensures that the bank's resources are used in a way that contributes most effectively to economic growth and the well-being of its customers. Hence, Allocative efficiency in the banking sector describes to the process of distributing capital and resources towards investments or loans that offer the greatest value to borrowers and the economy. This is done by taking into account the risk and return for the bank, with the goal of effectively allocating resources for economic growth and customer satisfaction.

d) Scale Efficiency

Another metric to consider, in addition to technical efficiency, is scale efficiency, which measures the distance from the most productive scale. Scale efficiency refers to the extent to which a firm operates at its most productive scale size, which is the level of output that contributes most effectively to minimising costs (Hatunoğlu, 2012). Moreover, (Maghyereh, 2004) simply explains scale efficiency as the ability to avoid waste by operating at the most productive scale. Therefore, scale efficiency can determine whether a company is too big or too small with its current level of

output. If a company is operating at a scale that is not optimal, then the company can scale up or down.

Efficiency of scale provides insight into the degree to which a corporation runs at the most favourable size to minimise average costs and maximise output. There are two generally accepted concepts of scale efficiency (Hatunoğlu, 2012). Increasing returns to scale refers to the ability of a company to enhance its production by extending its scale while maintaining technical efficiency. In contrast, decreased returns to scale arise when a company may enhance its production by reducing its size, while still retaining technical efficiency. Scale efficiency is attained when a company works at a level where it is unable to enhance production by altering the size of its operations, providing technical efficiency remains constant.

Within the banking industry, scale efficiency refers to a bank's ability to function with a sizeable amount of assets, branches, and services, resulting in the most cost-effective production per unit. If a bank lacks scale efficiency, it could be operating at either a suboptimal small or large size, resulting in elevated average costs and less competitive services (Maghyereh, 2004). However, the metric of scale efficiency does not indicate whether a bank is experiencing increasing or decreasing returns to scale.

Furthermore, as described by Maghyereh (2004), *“scale efficiency refers to the reduction in output that occurs when a company operates at the minimum point on the short-term average cost curve but not at the minimum point on the long-term average cost curve, while still maintaining the same rate of return”*.

Scale efficiency is commonly assessed by the application of DEA, a non-parametric technique utilised to evaluate the efficiency of DMU, such as banks, by comparing them to an optimal performance benchmark. A bank that operates at the border is regarded as fully scale efficient, but a bank operating below the frontier has potential for enhancing its operations in order to achieve optimal efficiency (Hatunoğlu, 2012).

e) X-efficiency

X-efficiency is the measure of how well a corporation uses its resources to produce goods or services, taking into account the existing technology and production knowledge (Sathye, 2001).

Sathye (2001) offers a thorough explanation of two types of efficiency in firms. *“Technical efficiency is all about maximising output with the available resources. Allocative efficiency, on the other hand, refers to a company's skill in utilising inputs in the most cost-effective manner. This involves allocating them in optimal proportions based on their respective costs to produce a specific output”*.

The concept of X-efficiency was introduced by economist Harvey Leibenstein to explain why firms often operate inside their production possibility frontier, meaning they could potentially produce more or at a lower cost than they actually do (Clark, J. & Siems, T. F., 2002). X-inefficiency occurs when firms are not achieving the lowest possible costs or highest possible outputs due to internal inefficiencies.

In the context of the banking industry, X-efficiency would involve banks optimizing their use of resources (such as labour, capital, and technology) to provide financial services at the lowest possible cost while maintaining a certain level of output or service quality. This concept is particularly relevant when assessing the performance of banks in competitive markets, where efficiency can be a significant factor in determining a bank's profitability and competitiveness.

2.4.3. Efficiency for Bank

In the financial sector, efficiency is key to achieving goals, particularly in banking. Efficiency serves as a benchmark for the banking industry's overall performance. It is possible to evaluate the banking sector's efficiency using both macro and micro factors (Weill, 2004). A bank needs to be able to survive in the increasingly competitive pressure, as the micro component reveals. Banks will not be able to compete in marketing, product innovation, or financial management if they are not efficient. Macroeconomically discussing, the stability of the financial system and the cost of financial intermediation can be impacted by the banking sector's efficiency.

Furthermore, a measure of a bank's performance is their ability to maximise outputs with the inputs they have. By identifying how inputs and outputs are distributed, bank performance can be further evaluated to determine the level of bank efficiency.

According to Fredi Setyono, et.al., (2021) explain “*that efficient banks are expected to have optimal profits, more funds, and better customer service*”.

Meanwhile, (Kamarudin, F., et.al., 2019) argue the efficiency refers to the ability of banks to manage their operations in terms of cost, revenue, and profit. Cost efficiency relates to how effectively a bank can minimize its costs while maintaining its level of services. Revenue efficiency is about how effectively a bank can generate income from its services, and profit efficiency combines both aspects, focusing on the bank's ability to maximize its profit by managing both its costs and revenues effectively (Kamarudin, F., et.al., 2019).

Therefore, banking efficiency is very important, and it needs to be given specific attention, in order for this sector to be able to compete successfully, grow, and effectively contribute to the growth of the nation. When it comes to banking, efficiency equals performance, and performance equals efficiency. A financial system that operates effectively can also encourage trust in investors by raising the possibility that their capital will result in a profit. Additionally, customers can reap the benefits of an efficient financial system in the form of reduced transaction costs.

2.4.2.1. Measurement of Efficiency

Measurement of efficiency in banking aims to assess the expertise of banks in surviving and experiencing competition in the banking industry. According to (Al-Amri, 2015) there are three types of efficiency assessment, namely:

- a) Effectiveness in Terms of Technology. The degree of output that can be achieved in relation to the amount of input that is used is a good indicator of the efficiency of the technology.
- b) Efficiency in Resource Allocation. The cost or price that is incurred and utilized as a measurement of how effective the management is in picking the inputs that are used. Allocation efficiency may be seen from this cost or price.
- c) The term "cost efficiency" refers to a state that is achieved by combining "allocative efficiency" and "technical efficiency." The term "cost efficiency" refers to a company's ability to create output at the lowest possible cost of inputs.

Meanwhile, according to (Muharam, H. & Pusvitasari, R., 2007) that measurement of efficiency could be carried out by three approaches, as following:

a) Ratio Technique

The ratio approach measures efficiency by comparing outputs with inputs. This technique is considered efficient if it can produce the most output with the least input. This method has a weakness when there are many inputs and outputs to be calculated. Simultaneous calculations will produce many calculation results, resulting in unclear assumptions. The equation can be presented as follows.

$$\text{Efficiency} = \frac{\text{Output}}{\text{Input}}$$

b) Regression Technique

The regression technique utilises a model that calculates efficiency by analysing the relationship between input levels and output levels. Here is how it can view this model function:

$$Y = f(X_1, X_2, X_3, X_4, \dots, X_8)$$

whereas Y = Output

X = Input

Through the use of regression analysis, an estimated connection can be established to estimate the output generated through an economic unit according to the level of input provided. An indicator of performance in an economic unit is its ability to exceed anticipated output. This method is limited in its ability to handle multiple output conditions, as the regression equation can only accommodate a single output indicator. According to Fuadi (2021), the accuracy of information decreases when multiple outputs are combined from a single indication.

c) Frontier Technique

According to a recent study by Fredi Setyono et al. (2021), the assessment of financial institution performance is currently centred around frontier efficiency, also known as X-efficiency. This method quantifies the divergence of financial institutions from the efficiency standards established by the top-performing

institutions. Furthermore, according to a study conducted by (Setyono, F., et.al., 2021), frontier efficiency analysis is a valuable tool for evaluating the performance of financial institutions. This analysis involves comparing the performance of a given institution to that of the top-performing institution in the industry, under the assumption that all institutions operate within the same industry.

In addition, Rahmawati (2015) mentioned that two distinct frontier techniques can be employed to evaluate efficiency. The deterministic approach, which is also referred to as the non-parametric approach, is the first, and the stochastic approach, which is also known as the parametric approach, is the second. The non-parametric approach is characterised by a model that does not place any limitations on the population parameters that serve as the basis for the research sample. In this regard, two notable methods within the non-parametric framework are Free Disposal Hull (FDH) and DEA. Meanwhile, the parametric approach involves using a model that imposes specific limitations on the population parameters under investigation. Within the parametric approach, there are three different approaches to consider: the SFA, TFA, and the Distribution Free Approach (Muharam, H. & Pusvitasari, R., 2007).

Therefore, this study utilises a non-parametric technique called DEA to estimate the efficiency of three Islamic bank mergers based on their measured efficiency. Prior research has utilised Data Envelopment Analysis (DEA), such as the study conducted by (Al'haq, 2022), to assess the efficiency of commercial Islamic banks. This analysis employs the DEA method with an intermediation approach to compare between the efficiency levels prior to and during the Covid-19 pandemic. Moreover, the most advantageous aspect of this approach is its ability to effectively manage a wide range of diverse inputs and outputs. However, when assessing efficiency, (Rahmawati, 2015) suggests that this method is particularly useful as it considers returns to scale, allowing for the potential to increase or decrease efficiency based on the output level or volume. Hence, the subsequent subchapter will delve into the subject of data envelopment analysis, including its related methodologies and variables of application.

2.4.2.2. Data Envelopment Analysis

According to Zhu & Cook in 1978, DEA was first introduced by Charnes, Cooper, & Rhodes which had been developed by Farell in 1957 (Panorama, 2018). DEA is a quantitative technique employed in mathematical programming to assess and measure the efficiency of economic entities that utilise inputs to generate desired outputs. In the DEA, the economic or organization entities will be referred to as a DMU (Andrew, F., et.al., 2017). DEA is considered an accurate technique for measuring efficiency, especially when dealing with a limited number of DMUs (Filzah, M. O., et.al., 2016).

In terms of measuring efficiency in financial institutions, the DEA model has two models, namely the Banker-Charnes-Cooper (BCC) and Charnes-Cooper-Rhodes (CCR) DEA models (Cooper, 2007). The CCR model operates under the assumption of CRS, which implies that all banks or decision-making units (DMUs) operate at optimal scale under perfect competition (Ahmad, Wahida and Luo, Robin H., 2010). The model provides a single efficiency value (CCR-efficient) for each DMU in each year under study, assuming that the degree of substitution between inputs and outputs is constant along the frontier (Cooper, 2007) (Filzah, M. O., et.al., 2016).

The BCC model, an extension of the fundamental CCR model, differs by incorporating VRS. The VRS assumption is employed in cases where the CRS assumption is invalid, indicating the absence of economies of scale across all operational levels. The BCC model calculates the efficiency score of each DMU using identical input-output variables, while also enabling the examination of inefficiency contribution through the dissection of technical efficiency (Filzah, M. O., et.al., 2016). Consequently, each DMU for each year of observation will have a unique set of efficiency scores known as BCC-efficient scores.

Therefore, this study prefers to utilise the assumption of BCC efficiency model namely VRS. The VRS is considered to be more appropriate for this research because the VRS assumption namely more flexible and realistic for many real-world scenarios, as it can accommodate the fact that firms or decision-making units (DMUs) may experience increasing and decreasing return to scale at different sizes of operation (Filzah, M. O., et.al., 2016). Besides, under the VRS assumption, the efficiency of a DMU on the efficient frontier is interpreted as being purely

technically efficient, without the influence of scale efficiency (Titko, J., et.al., 2014). On the other hand, by using the DEA BCC model, which incorporates VRS, analysis can measure input excesses and output shortfalls, providing a more nuanced analysis of efficiency. As for previous research that uses DEA model under Variable Returns to Scale Assumption are (Titko, J., et.al., 2014), (Kamarudin, F., et.al, 2015) and (Hossian, Moyazzem, et.al., 2016).

2.4.2.3. Choice of Input-Output Variables

In nowadays, DEA is being used in various fields, including education, finance, agriculture, sports, and healthcare, to determine in reference efficiency. One of the main factors contributing to the success of DEA, in contrast to other conventional methods of efficiency identification, is its utilisation of various inputs and outputs (Madhanagopal, R. & Chandrasekaran, R., 2014). However, this particular advantage also presents a complex situation when it comes to choosing variables. The DEA does not provide guidance on determining the ideal number of variables to use. Therefore, the researchers devised a distinct combination of both input and output variables for the identical problem.

The use of all variables is illogical due to the constraint that the number of DMUs should exceed three times the total number of input and output variables. However, in practical scenarios, the availability of DMUs is limited. Furthermore, acquiring data for all DMUs is challenging. Furthermore, the ability to differentiate between efficient and inefficient DMUs is entirely determined by the number of variables. While there is no restriction on the number of variables, employing an excessive number of variables will result in all DMUs being classified as efficient (Dyson, Robert G, et.al., 2001).

Furthermore, removing of certain inputs might significantly affect technical efficiency indicators. The primary factors contributing to model specification are the elimination of essential variables, the addition of irrelevant variables, and incorrect assumptions regarding the number of returns. Error of the model has significant effects on the efficiency ratings of DEA (D. U. A. Galagedera & Silvapulle, 2003). Hence, the effectiveness of a DMU is significantly influenced by the input and output variables employed in the model. Consequently, the main objective of DEA is to carefully choose the most appropriate variables for input and output. As a result,

according to the studies conducted by (Bilal, H., et.al., 2011) and (Martin, B. & Zuzana, P., 2018) there are two widely employed ways in literature for the selecting the efficiency variable as following:

a) The Production Approach

The production model, introduced by Benston (1965), emphasises on the bank's role as an agent of services to its customers. In this perspective, banks are regarded as production facilities, with emphasis placed on their capacity to convert inputs, such as labour and capital, into outputs, which involve the diverse services offered to customers. These outputs can be measured by the amount and type of transactions, documents handled, or specialised services provided within a specific timeframe (Bilal, H., et.al., 2011).

As for several previous research that utilised the production approach with those input-output variables as following:

Table 2. 1: Several Previous Research Utilised the Production Approach

Previous	Input Variables	Output Variables
(Camanho, A. S. & Dyson, G. R. , 1999)	Number of employees in the branch. Floor space of the branch (in mi2). Operational costs. Number of external ATMs	Number of general service transactions performed by branch staff. Number of transactions in external ATMs. Number of all types of accounts at the branch. Value of savings (in thousand escudos). Value of loans (in thousand escudos).
(Cevdet A., D., et.al., 2007)	Labor Capital	Loans Investments
(Athanasios G. N., et.al., 2008)	Personnel costs Other operating expenses	Deposits Financial products Loans Other loans
(Mehmet, H. E. and Kale, Suleyman, 2011)	Loan Losses Operating expenses Personnel expenses	Demand Deposit Time Deposits Demand FX Deposits Time FX Deposits Commercial Loans Consumer Loans No of Total Transaction Non-interest income

Source: Author (2024)

b) The Intermediation Approach

The intermediation concept was initially formulated by Sealey and Lindley in 1977. This perspective regards financial institutions as intermediaries that facilitate the conversion and transmission of financial assets from individuals who save money to individuals who borrow money. Within the field of Islamic banking, these assets are allocated towards the productive sector of the economy, resulting in profits that are free from the existence of Riba (interest). Under this methodology, deposits, labour, and tangible assets are regarded as inputs, while loans and investments are classified as output variables. The intermediation approach is commonly employed in the circumstances of developing nations and is utilised in research evaluating the effectiveness of financial institutions (Martin, B. & Zuzana, P., 2018).

As for several previous research that related to efficiency of Bank by intermediations approach are following:

Table 2. 2: Several Previous Research Utilised Intermediations Approach

Previous Research	Input variables	Output variables
(San, Ong Tze, et.al., 2011)	Total deposit Fixed assets	Total loans Total Investments
(Salim, Ruhul, et.al., 2017)	Labour Capital Different Funding (time deposits, saving deposits and other borrowed funds)	Loans earning assets Non-performing loans
(Davies, 2017)	Interest expense non-interest expense	Loan Investment
(Yagli, 2023)	Deposits Labour	Loan Net Interest Income
(Viorica, 2019)	Total Deposit Number of Employees Fixed assets	Total Loans Other earning assets

Source: Author (2024)

Consequently, varying methods of analysing banks result in discrepancies when choosing input-output variables. The primary distinction between the production and the intermediation approach lies in their treatment of deposits when calculating inputs and outputs. According to Athanasios G. N., et.al., (2008) and Mehmet H.E.

and Suleyman Kale (2011) “*in the production model, deposits are seen as output because they are services generated via the activity of banks*”. In the intermediation model, deposits serve as inputs. The bank takes the deposits it collects and converts them into different types of assets that generate income, particularly loans (Viorica, 2019) (Ong Tze San, et.al., 2011) (Yagli, 2023).

This study utilises the intermediation concept, which posits that a financial institution acts as a mediator, facilitating the conversion and transfer of financial assets from entities with surplus funds to those with inadequate finances. The intermediation approach entails transforming a collection of input variables possessed by the bank into multiple types of output derived from the aforementioned inputs. The intermediation strategy refers to the process of transforming inputs into outputs within the framework of a bank's function as an intermediary institution. The bank employs a range of resources, such as deposits, operational expenses, workforce, ATMs, capital, interest costs, and fixed assets, to produce outcomes that aim to optimise the bank's efficiency value. The outputs can manifest as finance, current assets, other operating income, client base, cash holdings, investments, and other similar factors.

As for several the latest studies on measuring efficiency bank applies Data Envelopment Analysis as well as applying intermediation approach along with the variables used are such as following.

Table 2. 3: Previous Research Utilised Intermediation Approach with Input and Output Variables

Previous research	Input Variables	Output variables
(Eltivia, 2013)	Deposit Labour Capital	Loans Investment
(Taufik Faturohman, et.al., 2019)	Costumer deposit Operating cost Fixed assets	Financing Operating Income other than interest
(Chowdhury, M. A. M. and Haron, R., 2022)	Deposit Labour Capital	Financing Investment
(Bahrini, 2017)	Labour Fixed assets Total Deposit	Financing Earning Assets
(Halida, Nor H. M. N., et.al., 2022)	Total Deposit Fixed assets	Financing Total Investments

	Total expenditures on general & administration	
(Devi, A & Firmansyah, I, 2020)	Operational cost Third-party funds total asset	Operational Income Number of financings

Source: Author (2024)

According to the table, this study utilises four input variables that consists of capital, fixed assets, third-party funds or costumer deposit, and operating costs. The basis for selecting capital as an input variable is based on various research studies of (Suryani, H., et.al., 2019) (Nadiyah Hidayati, et.al., 2017) (Majdina, Nur, et.al., 2019) that have examined the relationship between capital and bank efficiency. These studies have found that the CAR has a significantly positive impact on bank efficiency. Likewise, assets have a positive connection with bank efficiency according to (Majdina, Nur, et.al., 2019)'s finding. In accordance with earlier findings, both variable third-party fund and operating costs positively impact bank efficiency (Tesfay, 2016) (Pratiwi, Ratna N., et.al., 2022) (Ghozali, Imam and Subandi, 2014).

Several variables output that utilised in this study consists of three are financing, earning and operating income. The financing for variable output relies on the intermediary function of banks, which connect individuals or communities with surplus wealth (third-party funds) to individuals or communities in need of money through banking products. Furthermore, the bank carries out the distribution of wealth through various banking products such as mudharabah, musyarakah, ijarah, and others, which are together referred to as finance. Hence, bank activity in functioning as an intermediary can be assessed by efficiency, as a result the financing activity has correlation or connection with efficiency (Chowdhury, M. A. M. and Haron, R., 2022) (Taufik Faturrohman, et.al., 2019).

Meanwhile, selection of earning as an output variable based on research belongs to (Bahrini, 2017), that utilises earning assets to analyse the effectiveness of Islamic banks in the middle East and North Africa continent by data envelopment analysis. And operating income is selected due to be used by previous research that belong to (Taufik Faturrohman, et.al., 2019) and (Devi, A & Firmansyah, I, 2020) to evaluate the efficiency of Islamic banks. Furthermore, all used variables will be described comprehensive in third chapter of this research.

2.5. Bank Soundness: Definition and Measurement

According to Trisnawati (2014) *“bank soundness is the capacity of a bank to effectively conduct regular banking activities and meet all its obligations in compliance with relevant banking legislation.”*

Bank health, as described by (Anik & Ningsih, S., 2020), refers to the overall state of a bank's financial position, management, and operational activities. Bank health, as defined by Bank Indonesia in compliance with Indonesian Law No. 7 of 1992 regulating banking Article 29, is determined by the bank's adherence to prescribed standards. These criteria include multiple variables such as capital, asset value, quality of management, profitability quality, availability of fund, solvency, and other factors that are significant to the bank's operations (Bank Indonesia, 2011). Bank health refers to a bank's ability to carry out regular banking activities and adhere to banking regulations. To sustain its operations, a bank needs to have sufficient capital, maintain high-quality assets, have strong managerial capabilities, achieve profitability, ensure liquidity, and preserve solvency.

In addition, there are two commonly used methods to evaluate the stability of banks. One is the CAMELS method, which stands for Capital, Asset Management, Earnings, Liquidity, and Sensitivity. The other is the RGEC method, which focuses on Risk Profile, GCG, Earnings, and Capital. These methods were studied by (Trisnawati, 2014) and (Febrianti, E., et.al., 2024). A widely used assessment method, called the CAMELS approach, has been utilised for years to evaluate the stability and reliability of banks that comply with the regulations set by Bank Indonesia the number 6/10/PBI/2004. Subsequently, the RGEC method took over from the CAMELS approach as the preferred method for evaluating the financial stability of banks in Indonesia. This new method was implemented on 5 January 2011 with the aim of controlling the possibility of later financial crises (Bank Indonesia, 2011). The change in bank health assessment methodologies is a consequence of insufficient risk management practices that were not in line with the banking activities in the United States. This ultimately played a role in the worldwide financial crisis that occurred in 2008.

Indeed, the RGEC technique is an improvement upon the previous methodology by evaluating the soundness of banks using a risk-based bank rating system, with the

goal of reducing the likelihood of future financial crises. Therefore, this study utilises RGEC method to evaluate the soundness of the Islamic banks.

2.5.1. RGEC method

The RGEC approach is a method employed to evaluate the productivity or well-being of banks. RGEC stands for Risk Profile, Good Corporate Governance, Earnings, and Capital. According to a rule by Bank Indonesia (2011), the evaluation of banks' health levels was initially supervised by BI. In addition, the OJK, in its role as the overseer of recently established financial institutions, implemented enhancements to the regulation. This was achieved through the implementation of rules the number 4/POJK.3/2016 by the OJK. The regulation aims to assess the financial stability of commercial banks (Otoritas Jasa Keuangan, 2016). The evaluation of the status of Islamic commercial banking institutions and Islamic business entities is governed by the OJK legislation the number 8/POJK.3/2014 (Otoritas Jasa Keuangan, 2014). Here is a breakdown of the four factors used to evaluate the financial well-being of a bank:

2.5.1.1. Risk Profile

According to article 7 of Regulation No. 13/1/PBI/2011 published by the Central Bank of Indonesia, the risk profile is determined by assessing possible risks and the effectiveness of methods for managing risks in banking activities. Assessing intrinsic risk involves examining all of the risks that come with a bank's business operations. This assessment considers both tangible and intangible risks that could impact the bank's financial strength. Furthermore, in line with the regulations set by (Bank Indonesia, 2011), an assessment is undertaken to check effectiveness of any risk management practices implemented by the bank during its operations. When undertaking a test of the inherent risk involved, it is crucial to consider both quantitative and qualitative aspects or signs and factors. The assessment of the natural risk scale for each kind of risk is related with the fundamental concepts that are employed to ascertain the financial well-being of commercial banking institutions.

Finding out how well a banking institution's risk management practices follow to the guidelines set forth in Bank Indonesia's risk management regulations for commercial banks is the aim of the assessment of the high standard of its risk management

procedures (Bank Indonesia, 2011). When considering the effectiveness of the risk mitigation application, it is crucial to consider the specific attributes and complications of the banking institution's activities. Evaluation of risks is conducted considering eight separate risk categories: reputation, legal, strategic, market, liquidity, and operational (Raditya, S. and Sari, S., 2016).

Afterward, many previous research have discussed and analysed bank risk. Some of the most frequently analysed by researchers revolve around credit, liquidity, market, and total risk analysis (Zaenal Fanani & M. Nur Qowy, 2013) (Raditya, S. and Sari, S., 2016) (Sau, Woon L., et.al., 2015). However, for this study, the assessment of the risk profile on Islamic bank uses financing risk and liquidity risk. Both measures are appropriate with bank's role as intermediary between the party with exceed fund with the party lacking fund. Financing risk is the risk caused by customers or other parties not fulfilling their obligations to repay debts to banks based on agreed agreements. The financing risk originates from various bank business activities, for example, lending is the largest source of the credit risk (Zribi, Nabila & Boujelbène, Younes, 2011). As such, the financing risk is a major cause of bank failure, and the most visible risk faced by bank managers (Zaenal Fanani & M. Nur Qowy, 2013). And financing risk could be measured by non-performing financing.

Meanwhile, Bank liquidity refers to a bank's capacity to fulfil the potential withdrawal of deposits by depositors or meet the financial requirements of the community through Mudharabah and musyarakah financing. (Kasmir, Manajemen Perbankan, 2014). Banks are believed to possess higher liquidity when they are capable of promptly satisfying financing without any delays. This indicates the bank's operational state, which efficiently serves to its consumers. Hence, bank liquidity could be measured by financing to deposit ratio.

2.5.1.2. Good Corporate Governance

The circular letter issued by the OJK, specifically numbers 10 and 03 of 2014, outlines the procedure for assessing the financial soundness of commercial banks in order to determine their rating in terms of Good Corporate Governance (GCG) (Otoritas Jasa Keuangan, 2014). This assessment is grounded on a comprehensive and systematic examination of the execution of GCG principles and pertinent data. Meanwhile, Tunggal (2012) defines GCG as a legal framework that efficiently

manages and oversees the process of corporate control in order to increase shareholder value.

Corporate governance, as defined by the Indonesia Institute for Corporate Governance, refers to a set of protocols that govern and regulate the operations of a corporation. Its purpose is to ensure that the corporation operates in accordance with the expectations of its shareholders (Forum for Corporate Governance in Indonesia, 2011). According to Agoes (2011), efficient corporate governance is a set of transparent procedures that aim to identify and evaluate the aims and performance of a company. As per Bank Indonesia rule of number 13/1/PBI/2011, the verification of the bank administration standard in relation to the employment of the GCG fundamentals is known as the GCG factor assessment (Bank Indonesia, 2011). Therefore, the investigation of the GCG factor evaluates the effectiveness with which management of the bank implements the following five essential principles:

a) Transparency

Islamic banks must communicate information about their prospects and banking circumstances in a timely, sufficient, accurate, and clear manner. Because the information is helpful in helping stakeholders evaluate the standing and accountability of Islamic banks, it must be readily available to them in compliance with their rights (Bank Indonesia, 2011).

b) Accountability

According to the findings of (Bank Indonesia, 2011), it is essential for Islamic financial institutions to provide transparent and fair accounting of their performance. As per the findings of (Bank Indonesia, 2011), it is essential for Islamic banks to be managed in a manner that aligns with their objectives, can be measured effectively, and serves the interests of the bank, shareholders, and other stakeholders. This is because Islamic banks are dedicated to upholding the principles of Islamic banking. Ensuring long-term performance requires the essential element of accountability. The (Bank Indonesia, 2011) provides guidelines for implementing the concept of accountability. The following are these guidelines.

1. Islamic banks are required to clearly identify the specific tasks and responsibilities of each and every employee, as well as the duties and

responsibilities of each and every part of the bank, in accordance with the vision, mission, values, and strategies of Islamic banks.

2. Islamic financial institutions are required to have the belief that all corporate organs and all personnel possess the capability to contribute to the execution of Good Corporate Governance (GCG) in accordance with their respective tasks, obligations, and functions.
3. In order to ensure that Islamic banks are managed effectively, Islamic banks are required to have an efficient internal control system.
4. Islamic financial institutions are required to have performance indicators for all levels of Islamic financial institutions that are in line with the business objectives of the organisation and come equipped with a system of rewards and punishments. In order to fulfil their obligations and responsibilities, every component of the Islamic Bank, as well as every employee, is required to adhere to the business ethics and code of conduct that has been agreed upon.

c) Responsibility

Islamic financial institutions ensure clear obligations and align every aspect of their establishment with the corporation's mission, vision, strategic goals, and operational plans. Competencies are allocated to each component of the organisation in accordance with their specific duties. In addition, it is crucial for Islamic financial institutions to ensure the implementation of checks and balances in their management. The bank must establish a system of rewards and consequences to motivate its employees. Additionally, it is crucial for the bank to regularly assess employee performance based on predetermined benchmarks that align with the company's values, business goals, and overall strategy.

d) Professional

Islamic banks are required to adhere to prudential banking practices, which involve the bank's careful management of operational risks in line with regulations set by the central bank and the bank itself.

e) and fairness

Islamic banks are required to prioritise all stakeholders in line with the principles of equity and impartiality. Additionally, it is essential for banks to create avenues for

stakeholders to contribute recommendations and input for the advancement of Islamic banks.

2.5.1.3. Earning

Profits generated from owned capital are commonly referred to as earnings (Rolia, W. and Khoiriyyah, R. W., 2018). Assessing profitability in the banking sector involves quantifying the potential for generating profit (Jusman, 2019). Profitability evaluation can be determined by analysing the ROA ratio, NOM, and operating expenses as a percentage of operational income, as stated in circular letter 10/2014 from the OJK.

As per circular letter 10/2014 issued by the OJK, the assessment of profitability components requires an analysis of how they perform, resources, long-term sustainability, management, and social functions of profitability. Thus, this study employs three ratios to assess the earning factor and outlines the calculation of ROA, NOM, and BOPO in the methodology chapter.

2.5.1.4. Capital

Assessing the capital component requires a thorough evaluation of both the sufficiency of capital and the effectiveness of the utilisation of capital. Islamic commercial banks need to evaluate their capital adequacy by establishing a connection between their capital sufficiency and risk profile. When the level of risk is high, it is necessary to increase the amount of capital for the purpose to mitigate the risk (OJK, 2014). The banking institution's assessment technique, which relies on capital, involves calculating the CAR. A high CAR ratio suggests that the bank has a strong capital base to protect its operations. As per Kasmir's findings in *Bank dan Lembaga Keuangan lainnya* (Jakarta, 2012), the CAR is a metric used to assess the strength of a company's capital by comparing it to risk-weighted assets. This study uses the Capital Asset Pricing Model (CAPM) to determine the capital factor in the Residual Income Valuation (RIV) technique. The details of this formulation are explained in the methodology sub-chapter.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology refers to the systematic approach employed to address and resolve a problem. Research methods encompass a broader range of techniques and methodologies utilised in research, distinguishing them from other approaches. It is the systematic examination of techniques used in scientific investigation. Researchers in this subject familiarise themselves with a range of commonly used approaches for examining research topics. Therefore, the methodology used to carry out the research project is the scientific approach used by (Alok, S., & Mishra, S. B., 2017). This section will explicitly address the research technique. By comprehending the research strategy and model, doing data collecting, employing data analysis techniques, and attaining the results indicated below:

3.1. Research Design and Model

This research employs a quantitative methodology to accomplish the research objectives. The research is conducted in three steps as following:

Our primary objective in the initial phase of this study is to assess the effectiveness and reliability of four Islamic banks: BNI syariah, BRI syariah, BMS, and BSI. Efficiency plays a vital role in a company's ability to generate output that exceeds the value of the resources it uses. This study employs DEA to evaluate the efficiency of four Islamic banks. In many real-world situations, the analysis typically assumes VRS, which is generally regarded as being more adaptable and accurate. The soundness of banks is evaluated utilising the RGEC approach. The RGEC approach assesses a bank's capacity to effectively execute banking activities and meet all its obligations in compliance with relevant banking rules.

Second stage of this study focuses on analysing of condition pre- and post-merger in efficiency and soundness perspective. The step is carried out by comparing condition before and after merger through efficiency and soundness score. In addition, the pre-merger is represented with three banks are BRI syariah, BNI syariah and BMS, as for post-merger is represented with Bank Syariah Indonesia. furthermore, Data used in this process are efficiency and soundness score from each

variable and comparing them by using of Wilcoxon Signed Rank Test. Consequently, in this stage discovers answer of second question of this study regarding achievement of merger of three Islamic banks become Indonesia Islamic bank.

In the final stage, a thorough evaluation analysis is conducted by integrating the findings from the earlier stages. This analysis seeks to offer a concise explanation of the comparative analysis of the efficiency and soundness conditions prior to and after the merger of three Islamic banks from 2017 to 2022. When analysing and interpreting outcomes, it is important to establish connections with a theoretical framework. This framework will be used to generate a systematic analysis study report.



3.2. Research Framework

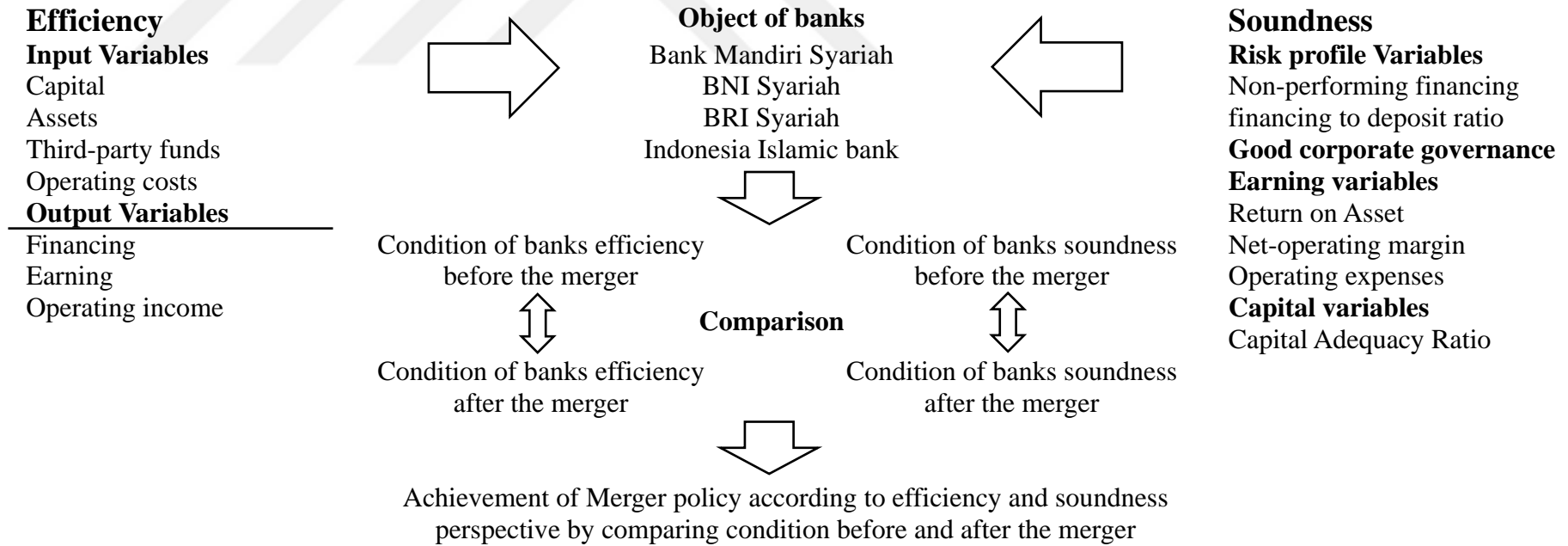


Figure 3. 1: Research Framework

Source: Edited by Author (2024)

3.3. Data Collection Method

For the analysis of the first research questions, two types of analyses are involved: Data Envelopment Analysis for efficiency analysis and an examination of risk profile, GCG, earnings, and capital for soundness. This study employs the secondary data collection method, specifically analysing the quarterly financial report of the OJK. The focus is on four Islamic banks: BRI syariah, BNI syariah, BMS, and BSI. The period under examination spans from 2017 to 2022. In addition, this study utilises the secondary data gathering method to evaluate the effectiveness and reliability of the initial research question. This study utilises secondary data gathered from both the Indonesia Financial Services Authority as well as Four Islamic institutions on a quarterly basis to address the research problem and research question.

3.4. Technique of Data Analysis

This study explores three key areas: efficiency, the stability of banks, and a comparison of bank conditions before and after a merger, all based on the research design. This work utilises DEA, a non-parametric computer programming technique used for estimating the frontier, emphasising efficiency. In addition, the study utilised the DEAP version 2.1 computer programme, developed by Tim Coelli, for mathematical programming calculations. This programme is used to construct DEA frontiers for calculating technical and cost effectiveness, as well as computing Malmquist TFP Indices (Coelli, 1996). The data analysis technique used to evaluate efficiency is DEAP version 2.1.

Bank soundness analysis is commonly performed using the RGEC approach. When evaluating the bank's soundness, it is important to assess its efficiency in properly performing it's the banking sector duties and fulfilling its responsibilities to comply with the appropriate banking rules. The RGEC approach evaluate the stability of a bank by taking into account four crucial factors: risk profile, GCG, earnings, and capital. In addition, each factor has its own unique set of variables. When assessing the stability of a bank, certain factors come into play. These factors encompass NPF, FDR, transparency, accountability, responsibility, professionalism, fairness, ROA, NOM, operating expenses, and CAR. In addition, a rating weight is assigned to each variable according to the guidelines outlined in the BI circular letter (Bank

Indonesia, 2011). The rating weights are comprehensively discussed in the sub-chapters, along with a detailed description of each variable.

In addition, the third analysis compares the state of the bank prior to and subsequent to the merger. The aforementioned institutions' conditions pertain to their efficiency and soundness. Furthermore, this comparison employs a Wilcoxon signed rank test, which is a type of nonparametric test utilised to assess the significance of differences between two sets of paired data that are not normally distributed but have ordinal or interval scales (Hidayat, 2014). Hence, prior to conducting the Wilcoxon signed rank test, it is necessary to conduct a normality test for this study.

3.4.1. Normality Test

As Sugiyono (2017) explains, a normality test is conducted to evaluate the distribution of data within a set of variables or data in order to determine whether or not the data follows a normal distribution. The conventional approach to assessing the normality of data is comparatively uncomplicated. Several statistical tests, including the Chi-Square test and Kolmogorov-Smirnov. The normality test used in this analysis is Kolmogorov-Smirnov test. To perform this Kolmogorov-Smirnov test, a hypothesis is formulated.

H_0 = The residual distribution is normal

Assuming the residual data is normally distributed, this study accepts the null hypothesis when the Kolmogorov-Smirnov test probability value is less than 0.05.

H_a = The residuals do not follow a normal distribution.

When the Kolmogorov-Smirnov Test's significant chance value is less than or equal to 0.05, the null hypothesis is thrown out. The remaining statistics are not distributed according to a normal distribution because of this.

3.4.2. Wilcoxon Signed Rank Test

Because data of efficiency is not normally distributed, so this study determines to utilise the Wilcoxon signed rank test for comparison test. The Wilcoxon signed rank test aims to find out whether there are differences in efficiency conditions both before and after the bank mergers. Therefore, this study has a hypothesis for efficiency and soundness is tested as follows.

H_0 = there is no difference in the efficiency and soundness condition of three Islamic banks pre- and post-merger.

H_a = there is a difference in the efficiency and soundness condition of three Islamic banks pre- and post-merger.

Meanwhile, this study utilises a significance level of 0.05. Furthermore, the determining factor is whether the coefficient of the Asymptotic significance 2-tailed exceeds the alpha value of 0.05. If that is the case, then H_0 is accepted. If the score of the Asymptotic Significance 2-tailed is lower than the alpha value of 0.05, then H_0 is denied.

3.5. Definition for Variables of Data Envelopment Analysis

3.5.1. Input Variables

3.5.1.1. Capital

Multiple definitions exist for a bank's capital. Initially, in (Kaufman, 1991) article, capital in banking refers to the cash that can be used to cover losses before they are deducted from deposits, potentially causing losses for depositors or the deposit insurance agency. Meanwhile, as stated by (faraq, M., et.al., 2013), bank capital refers to a bank's internal funds that are separate from borrowed funds, such as client deposits. It comprises components like common stock and accumulated profits, which reflect the disparity between a bank's overall assets and debts. The final notion is attributed to (Asli, D., et.al., 2010) concerning Bank capital refers to the financial resources that banks maintain as a safeguard against losses and to discourage excessive risk-taking. The term "capital buffer" refers to the portion of a bank's financial framework that is set aside to absorb unforeseen adverse impacts on the bank's worth, such as those encountered in times of financial turmoil. Hence, the conclusion that bank capital can be defined as cash used to cover losses before deposits are deducted, separate from borrowed funds like client deposits. Furthermore, in function, bank capital serves as a safeguard against losses and discourages excessive risk-taking, with a "capital buffer" to absorb adverse impacts during financial turmoil.

3.5.1.2. Assets

Asset word is related to business world; therefore, it can be found on financial report of various businesses model. In term, asset described as something have a value that is owned by a person, company, or organization, that could be tangible asset like property or land, and intangible ones likes the reputation in the community (Goff, 2023). Furthermore, in accounting, total asset of business is a result from addition between liability or debt and equity or capital of business.

According to the Economic Times (2024) *“that asset consists of several classification are current assets, fixed assets, financial assets, intangible assets”*.

Meanwhile, Islamic banks have the different asset side can be divided into several financing categories such as asset-based financing, partnership/contract financing, fee-based financing, investments, fixed asset, transaction deposits, investment deposits as well as money market deposits (Saiti, 2016). Hence, this study only utilises the fixed asset as a variable.

3.5.1.3. Third-Party Fund

Islamic banks function as intermediaries, playing the role of financial institutions responsible for collecting funds from the general public. Islamic banks generate capital by accepting deposits and making investments (Linda Sri Anisa & Fifi A. T., 2019). According to Indonesian Banking Authority Regulation No. 10/19/PBI/2008, funds received from third parties include contributions from various sources such as the general public, households, cooperatives, foundations, and individuals, corporations, and governments (Sopiana, 2012). Third- party funds, which are funds entrusted by consumers into banks in the type of savings accounts, current accounts, and money deposits which comply with the rules of sharia, are established through agreements or contracts between depositors and banks. Here is the formula for such funds:

$$\text{Third party fund} = \text{Current account} + \text{Deposit} + \text{Savings}$$

3.5.1.4. Operating Cost

For the purpose of generating profits, operating a business necessitates the sacrifice of resources. The monetary value of these resources is customary. Costs denote the locations where the resources utilised are utilised. Mulyadi has the following

definition of cost: Cost, as defined by Mulyadi (2016), denotes the exchange of monetary units for economic resources that have been expended or are anticipated to be expended for a particular objective. Jusuf defines operational costs as those which are not directly associated with the organization's products but rather pertain to its day-to-day operational activities (Rudianto, 2006). In contrast, costs associated with the organization's operations beyond production costs are categorised as operational costs (Rudianto, 2006). Costs incurred in connection with the company's operations and expressed in monetary terms constitute operational costs.

In Islamic bank, operating cost includes the cost of funds spent to raise public funds, employee salaries, administrative costs, and income tax costs. The cost of funds for banks is the largest amount of bank operating costs (Cut Marlina Ta & Meutia Fitri, 2016).

3.5.2. Output Variables

3.5.2.1. Financing

(Muhammad, 2005) Financing involves the provision of funds from one party to another to support investments, which can be self-managed or undertaken by institutions. According to Banking Law No. 10 of 1998, financing involves the provision of capital or similar instruments, based on an agreement between a financial institution and the party receiving the funds. The party receiving the funds must repay the amount or bills within a set period of time in return for sharing in the profits. The financing provided to fund consumers in Islamic banking adheres to sharia principles. The regulations applied are in fulfilment of the basic of Islamic law. In Islamic banking, the term used to describe financing is "productive assets." According to Rusdan (2016), productive assets include various financial instruments such as financial support, accounts receivable, qardh, securities, participation in equity investments, and dedication and contingencies on administrative accounts. Additionally, productive assets can also be invested with Islamic bank funds in both rupiah and foreign currencies.

3.5.2.2. Operating Income

Revenue is an inflow of assets or other increase in assets or settlement of the entity's liabilities (or a combination of both) from the delivery of goods, provision of services, or other assets that are the main or central operations of the company.

While what is meant by other operating income in this study is service income. Islamic bank income is not only from mudharabah fund management income, but there are other revenues that are fully entitled to Islamic banks where the income is not shared between the owner and the fund manager (bank). In practice, other operating income in Islamic banks is income derived from fee base income, for example income from clearing fees, transfer fees, payroll payment fees, ATM services, letters of credit, bank guarantees and other fees from services that belong to Islamic banks fully (Purwaningsih, 2016)

3.5.2.3. Earnings

Financial reports often contain words that can be confusing for the general public, such as income, revenue, and earnings. Net income refers to the remaining amount of money that a corporation has after deducting all operational expenses, taxes, and other costs (CFI Team, 2024). Consequently, net income can be found in last line of financial statement. There is a prevalent practice of using earnings and net income interchangeably. Revenue refers to the whole income made from the sale of goods or services that are directly linked to a company's main operations (Tarver, 2023). In an Islamic bank, net income is comprised of two components: net income before deductions for tax and zakah, and net income after deductions for both. This study focuses on the net income after deductions for tax and zakah.

3.6. Definition for Variables of Risk Profile, Good corporate governance, Earning, and Capital (RGEC)

3.6.1. Risk Profile

3.6.1.1. Non-Performing Financing

NPF is an indicator that quantifies the disparity between NPF and total financing. NPF is categorised into two distinct groups: gross NPF and net NPF. The inclusion of Earning Assets Provision (AEP) is absent in gross Non-Performing Assets; however, AEP is included in net NPF. An Allowance for Loan and Lease Losses (ALLL) is a financial provision set up to mitigate the risk of default on loans. Moreover, a high NPF level suggests that the financing disbursement operations of Islamic banks are of substandard quality. This study aims to analyse the financial losses incurred by Islamic commercial banks as a result of non-performing loans,

specifically focusing on gross non-performing loans without considering reserves and the formula for NPF is as follows:

$$\text{Gross NPF} = \frac{\text{Trouble Financing}}{\text{Total financing}} \times 100\%$$

Table 3. 1: Rating Weight for Non-Performing Financing Component

Ranking	Criteria	Predicate
1	NPF < 2%	Very Good
2	2% < NPF < 5%	Good
3	5% < NPF < 8%	Satisfactory
4	8% < NPF < 12%	Poor
5	NPF > 12%	Very Poor

Source: Bank Indonesia circular letter no. 13/24/DPNP of 2011

3.6.1.2. Financing to Deposit Ratio (FDR)

The FDR ratio is a ratio that is frequently utilised in the process of evaluating the capability of financial institutions to manage unpredictable necessities. The FDR estimates take into account unrestricted profit-sharing investment accounts, remunerative funding (Murabaha, commodity-Murabaha), and non-remunerative funding (current accounts and Wadiah accounts). It does not consider interbank funding (Islamic Financial Services Broad, 2020). The FDR is a useful calculation to find out how the total financing stacks up against the real third-party funds and own capital. Because more money will be needed to lend or finance something, a bigger FDR means more liquidity risk exposure, which can lead to liquidity risk (Rivai, 2010). The following formula is used to determine FDR:

$$\text{Financing to Deposit Ratio} = \frac{\text{Total of financing}}{\text{Total of third-party fund}} \times 100\%$$

Table 3. 2: Rating Weight for Financing to Deposit Ratio Component

Ranking	Criteria	Predicate
1	FDR < 75%	Very Good
2	75% < FDR < 85%	Good
3	85% < FDR < 100%	Satisfactory
4	100% < FDR < 120%	Poor
5	FDR > 120%	Very Poor

Source: Bank Indonesia circular letter no. 6/23/DPNP of 2004

3.6.2. Good Corporate Governance

The bank has outlined the GCG assessment in its corporate governance report. The bank has also produced a report that includes ratings derived from self-assessment, along with a detailed account of the implementation of three key aspects of the GCG: governance framework, governance procedure, and governance final results. The GCG rating relies on the application of GCG fundamentals, the effective management of the structure, process, and outcomes of GCG execution, and additional data and information related to the GCG.

The authors of this study utilised the summary results of the GCG composite value computation provided by BRI Syariah, BNI Syariah, BMS, and BSI in their self-assessment reports. These results were used as a reference to evaluate the overall health of these four banks. The GCG factor rating can be described in the following way:

Table 3. 3: Rating Weight for Good Corporate Governance

Ranking	Criteria	Predicate
1	$GCG < 1.5$	Very Good
2	$1.5 < GCG \leq 2.5$	Good
3	$2.5 < GCG \leq 3.5$	Satisfactory
4	$3.5 < GCG \leq 4.5$	Poor
5	$4.5 < GCG \leq 5$	Very Poor

Source: Bank Indonesia regulation no. 13/1/PBI/2011

3.6.3. Earning

3.6.3.1. Return on Asset

ROA metric evaluates the overall efficiency of a business in producing profits through the utilisation of its assets. When evaluating the profitability of a bank, ROA is the most comprehensive accounting metric available. It measures the capacity and potential of a financial institution to produce profits through its day-to-day operations. The regulatory body of the Indonesian banking system, Bank Indonesia, prioritises bank profitability over ROE, as indicated by the ROA metric. This is due to the fact that Bank Indonesia assesses a company's financial productivity in line with its assets, the majority of which are deposits. Consequently, ROA offers a more precise indication of a financial institution's capacity to produce profits. The following formula is utilised in the computation of ROA:

$$\text{Return on Asset} = \frac{\text{Profit before tax}}{\text{Average – Total Assets}} \times 100\%$$

Table 3. 4: Rating Weight for Return on Asset Component

Ranking	Criteria	Predicate
1	ROA > 1.5%	Very Good
2	1.25% < ROA ≤ 1.5%	Good
3	0.99% < ROA ≤ 1.25%	Satisfactory
4	0.765 % < ROA ≤ 0.99%	Poor
5	ROA ≤ 0.765%	Very Poor

Source: Bank Indonesia circular letter no. 13/24/DPNP of 2011

3.6.3.2. Net Operating Margin

The NOM is the fundamental ratio that is utilised by Islamic financial institutions in order to measure the profitability of properties in terms of generating profits. As Munandar (2020) points out, the net operating margin is commonly seen as a measure of profitability. It assesses the effectiveness of productive assets in generating revenue by comparing operating revenue and expenses with the average productive assets. When the NOM ratio is exceeded, the income earned from profitable assets also increases, which helps to lower the risk of the bank encountering financial difficulties (Munandar, 2020). The NOM can be calculated using the following formula:

$$\text{NOM} = \frac{\text{Income after profit sharing} - \text{Operating expenses}}{\text{Average of earning assets}} \times 100\%$$

Table 3. 5: Rating Weight for Net Operating Margin Component

Ranking	Criteria	Predicate
1	NOM > 3%	Very Good
2	2% < NOM < 3%	Good
3	1.5% < NOM < 2%	Satisfactory
4	1% < NOM < 1.5%	Poor
5	NOM < 1%	Very Poor

Source: Bank Indonesia circular letter no. 9/24/DPBS of 2007

3.6.3.3. Operating Expenses to Operating Income

The BOPO are a calculation utilised to assess the operational efficiency of an Islamic bank (Pusat Edukasi dan Riset Edukasi Bank Sentral (PRES) Bank Indonesia, 2012). The ratio measures the total operating expenses divided by the operating income. The equation used to compute this ratio is as following:

$$\text{Operating Expenses to Operating Income} = \frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100\%$$

Table 3. 6: Rating Weight for Operating Expenses to Operating Income Component

Ranking	Criteria	Predicate
1	Score < 83%	Very Good
2	83% < Score < 85%	Good
3	85% < Score < 87%	Satisfactory
4	87% < Score < 89%	Poor
5	Score > 89%	Very Poor

Source: Bank Indonesia circular letter no. 13/24/DPNP of 2011

3.6.4. Capital Adequacy Ratio

The CAR evaluates the bank's capacity to sustain sufficient resources and the company's management's proficiency in identifying, analysing, evaluating, and managing risks that may impact the capital. CAR is a calculation of the proportion of a bank's risk-bearing assets (such as loans, investments, bonds, and advances to other banks) that are financed by its own capital in addition to external sources of funding. CAR is a metric that assesses a bank's capacity to offset potential losses in assets due to hazardous investments. This ratio is designed to ensure that the bank's capital reserves are sufficient to absorb any losses arising from its activities (Arfiyanti, D., & Pertiwi, I. F. P., 2020). The formula used in this study to assess the CAR and its categories in conventional banking and Islamic banking, in accordance with Bank Indonesia regulations, is presented below:

$$\text{Capital Adequacy Ratio} = \frac{\text{Capital}}{\text{Risk Weighted Assets}} \times 100\%$$

Table 3. 7: Rating Weight for Capital Adequacy Ratio Component

Ranking	Criteria	Predicate
1	CAR \geq 12%	Very Good
2	9% < CAR < 11%	Good
3	8% < CAR < 9%	Satisfactory
4	6% < CAR < 8%	Poor
5	CAR < 6%	Very Poor

Source: Bank Indonesia circular letter no. 13/24/DPNP/2011

CHAPTER IV

RESULT ANALYSIS AND DISCUSSIONS

This chapter is discussing evaluation of circumstances of BNI syariah, BRI syariah, BMS and BSI from perspective efficiency and soundness. Consequently, this chapter comprises of three sub-chapters are as follows.

4.1. Evaluation of Bank Efficiency

In this study, the evaluation of bank efficiency analysed by DEA. The efficiency refers to the ability of a firm to generate an output that is of greater value than the input it requires. As for DEA is a quantitative technique employed in mathematical programming to assess and measure the efficiency of economic entities that utilise inputs to generate desired outputs. Besides, this study assumes that bank or DMUs must experience increasing and decreasing return to scale at different sizes of operation, which is this study able to evaluate the efficiency banks with observation against lots of banks in long term period.

Furthermore, this study determines that bank is an intermediation institution in finance, in which bank purposes to connect between individual or companies have wealth who set aside it into the bank then bank distributes the wealth to individual or community who require the wealth by various bank's financing and loan such mudharabah, musyarakah, mortgage, derivative and so on. Under intermediation assumption, variable of deposits, labour, and tangible assets are regarded as inputs, while loans and investments are classified as output variables. the utilisation of Data envelopment analysis with intermediation approach has been utilised by lots of previous research are such as research belonging to (San, Ong Tze, et.al., 2011), (Salim, Ruhul, et.al., 2017), (Davies, 2017), (Yagli, 2023) and (Viorica, 2019).

As a consequence, selection of input and output variables, this study attempts to seek appropriate and significant variables with DEA using intermediation approach. This study employs 4 input variables are capital, assets, third-party fund and operating cost, in which all input variables have significant correlation with bank efficiency according to plenty of research (Suryani, H., et.al., 2019) (Nadiyah Hidayati, et.al., 2017) (Majdina, Nur, et.al., 2019) (Tesfay, 2016) (Pratiwi, Ratna N., et.al., 2022). Meanwhile, output variable has three variables are financing, operating

income, and earnings, whereas three output variables have been employed by lots of research which use data envelopment analysis, those research belong to (Chowdhury, M. A. M. and Haron, R., 2022) (Taufik Faturohman, et.al., 2019) (Bahrini, 2017) (Devi, A & Firmansyah, I, 2020). Hence, this study determines to utilise 4 input and 3 output variables.

Additionally, four Islamic banks in Indonesia BRI Syariah, BNI Syariah, BMS, and Bank Syariah Indonesia undertake the efficiency evaluation. Therefore, we divide this sub-chapter into four sections, each evaluating a single bank. Besides, the observation of bank efficiency is divided into two sections: the first section of efficiency observation for BRI Syariah, BNI Syariah, and BMS begin from 2017 to 2019, while the evaluation of efficiency for Indonesia Islamic Bank begins from 2020 to 2022. This study, therefore, employs secondary data collected quarterly from the financial reports of financial service authority in the 2017–2022 period.

4.1.1. Efficiency of BRI syariah

The evaluation of efficiency at Bank Rakyat Indonesia (BRI) Syariah. In brief, BRI Syariah was established on November 17, 2008, after the publication of letter number. 10/67KEP.GBI/DPG/2008 on October 17, 2008. Reports of the efficiency of BRI Syariah during the 2009–2016 period, which were collected from previous research using DEA, are as follows.

Table 4. 1: Efficiency Score of BRI Syariah During the 2009–2016 Period

Research	Evaluation in	Score	Result
(Setiawan, 2013)	2009	100 %	Efficiency
(Falhanawati, 2013)	2010 – 2012	100 %	Efficiency
(Sadikin, D. S., et.al., 2016)	2012	100 %	Efficiency
(Meruni, S. P. & Ade, S. M., 2017)	2013 – 2014	100 %	Efficiency
(Sadikin, D. S., et.al., 2016)	2013	100 %	Efficiency
(Yuning T. I., & Setiawan, A. A., 2016)	2015	92.8 %	Inefficiency
(Sadikin, D. S., et.al., 2016)	2015	78%	Inefficiency
(Puspitasari, 2017)	2015	31.9	Inefficiency
(Lathifah, 2017)	2016	74.2 %	Inefficiency

Source: Author

According to Table 4.1, the efficiency score of BRI Syariah during the 2009–2014 period led to average efficiency. Meanwhile, in 2015 and 2016, the efficiency score of BRI syariah led to inefficiency, and the efficiency score of BRI syariah in 2015

reached 92.8%, making it almost efficient. Meanwhile, BRI Syariah's efficiency score in 2016 decreased by 20% year over year.

In addition, this study attempts to evaluate the efficiency of BRI syariah in 2017 – 2019 period. Furthermore, the review of variables of BRI Syariah for the period of 2017 to 2019 is as follows:

Table 4. 2: Input and Output Variables of BRI Syariah in the Period of 2017 – 2019 Quarterly (In Thousands of Dollars)

	Variable	Q1	Q2	Q3	Q4
2017					
Input	Third-party fund	1,449,371	1,509,622	1,597,504	1,660,540
	Asset	25,395	26,395	26,607	28,733
	Operating cost	24,470	48,112	71,893	105,241
	Capital	1,630	2,702	2,702	2,703
Output	Financing	1,132,852	1,166,969	1,175,375	1,197,683
	Operating income	1,972	4,336	7,427	10,993
	Earning	2,035	4,251	7,742	5,848
2018					
Input	Third-party fund	1,782,692	1,690,581	1,748,651	1,818,249
	Asset	29,526	29,576	30,546	32,289
	Operating cost	37,581	60,532	93,159	141,353
	Capital	3,339	3,339	3,339	3,339
Output	Financing	1,230,487	1,320,022	1,340,574	1,376,802
	Operating income	14,060	14,559	20,433	33,290
	Earning	3,584	7,886	9,746	6,715
2019					
Input	Third-party fund	1,791,461	1,769,887	1,777,821	2,149,762
	Asset	32,401	32,384	32,892	33,056
	Operating cost	33,290	68,452	107,071	149,289
	Capital	3,339	4,011	4,011	4,011
Output	Financing	1,428,743	1,512,310	1,610,228	1,725,045
	Operating income	8,489	9,717	14,708	20,698
	Earning	1,893	2,240	3,557	4,663

Source: Financial Services Authority

Table 4.2 illustrates the input and output variables of BRI Syariah in the 2017–2019 period. BRI Syariah has succeeded in collecting third-party funds, which are increasing gradually from 2017 to 2019. A significant improvement in collecting third-party funds occurred in 2019, which increased by 18.23% over 2018. Simultaneously, BRI Syariah attempts to transfer third-party funds to customers through financing in the form of murabahah, istishna, mudarabah, musyarakah, and ijarah, aiming to operate as an intermediary financial institution. The increasing

distribution of financing is excellent and consistent; from 2017 to 2018, it increased by 14.95%, then increased significantly in 2019 by 25.29% year on year.

Meanwhile, other variables, such as earnings or net profit, were not good enough due to a decrease in 2017 and 2018. In addition, profit growth in 2019 was not as good as the previous year. In 2017, the earnings of BRI Syariah increased from the first quarter to the third quarter, which were 108% and 82%, respectively, but in the fourth quarter they fell by 24%. As for the progress of the growth of the net profit of BRI Syariah in 2018, it was the same as the situation in 2017. However, it was different in 2019. The growth of the net profit of BRI Syariah grew every quarter, even though the growth score was not as big as the previous year. According to research conducted by (Maria, Vivin A. T., et.al., 2019), the decline in earnings was caused by non-performing loans that increased or many defaults by customers.

Then this study evaluates the efficiency of BRI syariah in the period of 2017 to 2019. Furthermore, the evaluation is conducted by data envelopment analysis employing DEAP-xp. The result of evaluation is as follows.

Table 4. 3: Evaluation of Efficiency of BRI Syariah for the Period of 2017 to 2019

BRI syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1	0.97	1	1
2018	1	1	1	1	
2019	1	1	0.99	1	

Source: DEAP-xp

Based on table 4.3, the efficiency of BRI Syariah gets a high and stable efficiency value throughout 2017 to 2019. The BRI syariah has a ratio between third-party funds and financing that is quite stable; as shown in Table 4.2, the ratio of third-party funds to financing reached 78% for the period of 2017 to 2019. Moreover, operating costs were also successfully suppressed by BRI Syariah for the periods of 2017 and 2019. Simultaneously, operating income and earnings experienced growth every year; for example, in 2017, the average growth of operating income was 79%, and for earning growth, the average growth was 55%. Therefore, the condition of BRI Syariah for the period 2017–2019 reached high efficiency.

Based on the condition of BRI Syariah during the period of 2017–2019 in Table 4.3, the theory of bank efficiency owns (Kamarudin, F., et.al., 2019), which comprises

three parts of efficiency: cost, revenue, and profit efficiency, is not entirely accurate. Although BRI Syariah successfully manages the operating cost by minimising its cost during the three years, for instance, BRI Syariah reduced the operating cost to 46.39% in the fourth quarter of 2017, and in the second quarter, the growth of the operating cost was 96.61% over the first quarter. Subsequently, BRI Syariah could earn higher operating incomes during the period 2017–2019, in spite of the fact that operating incomes did not grow. However, as for-profit efficiency, BRI Syariah could achieve efficiency consistently, even when earnings lead to minuses, such as in the fourth quarter of 2017 and 2018.

4.1.2. Efficiency of Bank Negara Indonesia Syariah

Assessing the effectiveness of BNI Syariah, a banking institution in Indonesia, which has been operating since 2000 as a BNI sharia business unit. Since June 19, 2010, UUS BNI has officially spun off from its parent, conventional BNI, and changed its name to BNI Syariah. In 2020, BNI Syariah merged with two Islamic banks, BRI Syariah and BMS, to form BSI, solidifying its position in Indonesia's state-owned enterprises. BNI Syariah has been operating for 23 years since its establishment in 2000 and is now the largest Islamic bank in Indonesia following its merger with two other Islamic banks to form Bank Syariah Indonesia.

This study aims to evaluate the efficiency of BNI Syariah in the 2017–2019 period. However, before the evaluation is undertaken, this study wants to find out how efficient BNI Syariah was before 2017 based on several research outcomes, as follows:

Table 4. 4: The Review of the Efficiency of Bank Negara Indonesia for the Period of 2011 to 2016

Research	Evaluation in	Score	Result
(Yudhanto, 2016)	2011	100 %	Efficiency
(Yudhanto, 2016)	2012	100 %	Efficiency
(Yudhanto, 2016)	2013	79.3 %	Inefficiency
(Ulya, 2014)	2013	92.2 %	Inefficiency
(Sadikin, D. S., et.al., 2016)	2014	80 %	Inefficiency
(Yudhanto, 2016)	2014	56.1 %	Inefficiency
(Puspitasari, 2017)	2014	37.2 %	Inefficiency
(Cahyaningsih, Pinaestri, et.al., 2017)	2015	100 %	Efficiency
(Cahyaningsih, Pinaestri, et.al., 2017)	2016	100 %	Efficiency

(Sadikin, D. S., et.al., 2016)	2016	100 %	Efficiency
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Source: Author

According to table 4.4, the efficiency evaluation of BNI Syariah in the 2011–2016 period shows average inefficiency. BNI Syariah experienced inefficiency in 2013 and 2014. Meanwhile, the performance of BNI Syariah in the 2011–2012 period and in the 2015–2016 period was excellent with efficiency. Then, this study attempts to evaluate the efficiency of BNI Syariah in the 2017–2019 period based on seven variables: third-party funds, assets, operating costs, capital, financing, operating income, and earnings. The evaluation is as follows:

Table 4. 5: Input and Output Variables for BNI Syariah in the 2017–2019 Period Quarterly (In Thousands of Dollars)

	Variable	Q1	Q2	Q3	Q4
2017					
Input	Third-party fund	1,625,953	1,679,868	1,740,801	1,850,804
	Asset	24,134	24,313	24,648	25,855
	Operating cost	30,645	61,760	95,749	126,678
	Capital	5,849	5,849	9,459	9,459
Output	Financing	1,339,467	1,420,876	1,419,139	1,486,520
	Operating income	3,741	7,885	11,216	13,473
	Earnings	4,891	10,400	15,535	19,320
2018					
Input	Third-party funds	2,075,631	2,040,679	2,112,662	2,236,170
	Assets	28,738	29,067	29,409	32,392
	Operating cost	36,479	71,420	107,455	144,686
	Capital	9,459	9,459	15,759	15,759
Output	Financing	1,496,159	1,582,728	1,693,396	1,788,242
	Operating income	5,057	8,695	12,713	17,323
	Earnings	5,952	12,788	19,316	26,212
2019					
Input	Third-party fund	2,423,968	2,288,283	2,361,786	2,757,492
	Asset	32,741	32,682	33,816	43,936
	Operating cost	40,954	77,139	119,836	167,541
	Capital	15,759	21,001	21,001	21,001
Output	Financing	1,859,812	1,999,674	2,008,666	2,056,790
	Operating income	5,732	9,667	15,899	26,753
	Earnings	8,527	19,861	29,102	37,997

Source: Financial Services Authority

Table 4.5 illustrates the input and output variables of BNI Syariah in the 2017–2019 period. BNI Syariah's performance in 2017 for third-party funds grew throughout the year with an average growth of 4.4%, and the fixed assets of BNI Syariah grew consistently, although the growth was small. As for operating costs, BNI Syariah

managed to reduce the value of operating costs every quarter in 2017. Furthermore, the capital reserve kept by BNI Syariah throughout 2017 increased in the 3rd quarter by 61%. Simultaneously, on the financing side, BNI Syariah has excellent financing distribution because the value of funds transferred grew every quarter following the growth of third-party funds. In terms of profit throughout 2017, BNI Syariah recorded a good level of profit, with an average operational income of 57%, while profit after tax continued to increase every quarter in 2017.

Maintaining the upward trajectory, BNI Syariah was able to slow the increase in running expenses in 2017. Operating costs dropped by 45% from the second to the third quarter and by 15.8% from the third to the fourth. The operating cost value fell by 2.6% in comparison to the prior year. At the same time, the asset side saw growth as well; on average, it increased by 4.1% every quarter, with the fourth quarter seeing the biggest gain. Additionally, net income, or earnings, grew by 5% over 2017. In 2018, earnings grew by 67% on average, with a notable gain in the second quarter. However, this year also saw a drop in fund collection performance, which was 42% lower than in 2017.

Performance of BNI Syariah in 2019: BNI Syariah aims to build on the positive aspects of the previous year. Net income increased at a very strong rate, averaging 70% growth over the course of the year and 4.1% annually. Simultaneously, operating income grew significantly this year as well; on average, it grew by 67.12%, which was 30% higher than in 2018. Furthermore, the greatest development this year can be found in BNI's fixed assets, which rose by 29% in the fourth quarter of the year despite declining by 0.18% in the second.

Subsequently, this study uses the data in Table 4.5 to find out the efficiency of Bank Negara Indonesia Syariah during the period of 2017 to 2019. This evaluation of this efficiency applies the Data Envelopment Analysis by DEAP-xp, and the result of the evaluation is as follows:

Table 4. 6: Evaluation of Efficiency of Bank Negara Indonesia Syariah for the Period of 2017 to 2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1	1	1	1
	2018	1	1	1	1
	2019	1	1	1	1

Sources: DEAP-xp

For the years 2017 through 2019, Bank Negara Indonesia (BNI) Syariah effectively controlled efficiency; according to table 4.6, efficiency has a value of 1. Throughout that time, BNI syariah regularly reduces the rise of operational costs. One example of this is in 2017, when BNI syariah dramatically decreased operating costs to 32.3% in the fourth quarter compared to a 101% increase in the same quarter. Hence, the condition of BNI Syariah is proper with the theory of (Kamarudin, F., et.al., 2019) that minimizes operating costs by attempting to achieve cost efficiency while maintaining its level of services.

Furthermore, revenue efficiency is defined by (Kamarudin, F., et.al., 2019) as the means by which a bank can make money off of its lower-value services. As a result, Table 4.5 shows that, from 2017 to 2019, BNI Syariah's operational income increased every quarter, although not significantly in some of them, such as the 20% increase in the fourth quarter of 2017. As a result, the BNI Syariah is a bank that effectively controls a limited number of inputs to produce more outputs, as demonstrated by the operational income that increased between 2017 and 2019.

4.1.3. Efficiency of Bank Mandiri Syariah

An evaluation of the efficacy of Bank Mandiri Syariah from 2017 to 2019. Bank Mandiri Syariah is a subsidiary of Bank Mandiri, which was established on July 31, 1999, through the consolidation of four institutions. Following the implementation of Law No. 10 of 1998, Bank Mandiri plans to improve its Islamic banking services within the Bank Mandiri group of enterprises. Consequently, on September 8, 1999, the Bank Mandiri team of developers effectively transitioned PT Bank Susila Bakti from a conventional bank to a syariah bank mandiri. Subsequently, on February 1, 2021, the Indonesian president made an official announcement regarding the merger of three Islamic institutions, including Bank Mandiri Syariah, into BSI.

This study aims to evaluate the Bank Mandiri Syariah's effectiveness from 2017 to 2019. On the other side, this study reviewed Bank Mandiri Syariah's efficiency status before the year 2017 before making the assessment. The following are the review's findings, which were gathered from numerous different research projects:

Table 4. 7: The Review of the Efficiency of Bank Mandiri Syariah for the Period of 2011 to 2016

Research	Evaluation in	Score	Result
(Sadikin, D. S., et.al., 2016)	2011	100 %	Efficiency
(Nadrattuzaman, H. & Rafika, R., 2014)	2012	85 %	Inefficiency
(Puteh, A., et.al., 2018)	2012	73 %	Inefficiency
(Nadrattuzaman, H. & Rafika, R., 2014)	2013	91.4 %	Inefficiency
(Puteh, A., et.al., 2018)	2013	86.4 %	Inefficiency
(Puspitasari, 2017)	2014	100 %	Efficiency
(Cahyaningsih, Pinaestri, et.al., 2017)	2015	69.6 %	Inefficiency
(Puspitasari, 2017)	2015	80.3 %	Inefficiency
(Cahyaningsih, Pinaestri, et.al., 2017)	2016	57 %	Inefficiency
(Sadikin, D. S., et.al., 2016)	2016	62 %	Inefficiency

Source: Author

Table 4.7 indicates that Bank Mandiri Syariah's efficiency condition from 2011 to 2016 averaged 80%, classifying it as intermediate efficiency. Bank Mandiri Syariah only exhibits high efficiency in 2011, 2013, and 2014, despite having mediocre performance and inefficiency from 2011 to 2014. On the other side, from 2015 to 2016, Bank Mandiri Syariah's low efficiency occurred. In the meantime, Bank Mandiri Syariah's intermediate efficiency study was carried out in 2012. Next, for the years 2017 to 2019, this study aims to assess the effectiveness of Bank Mandiri Syariah. The variables used for evaluation are third-party funds, assets, operating costs, capital, financing, operating incomes, and earnings. The evaluation is as follows:

Table 4. 8: Input and Output Variables of Bank Mandiri Syariah in the Period 2017–2019 (In Thousands of Dollars)

	Variable	Q1	Q2	Q3	Q4
2017					
Input	Third-party funds	4,475,021	4,554,656	4,709,063	4,907,656
	Asset	128,316	128,361	127,772	125,641
	Operating cost	76,943	158,321	266,179	351,611
	Capital	25,060	31,360	31,360	31,360
output	Financing	4,611,671	3,644,677	3,685,530	3,809,523
	Operating income	13,095	23,420	58,791	70,830
	Earning	5,686	11,404	16,444	23,004
2018					
Input	Third-party fund	5,202,545	5,191,983	5,183,098	5,510,454
	Asset	126,777	128,535	128,686	135,313
	Operating cost	86,449	160,889	243,632	334,118
	Capital	31,360	31,360	31,360	37,660
	Financing	3,842,183	3,914,666	4,095,214	4,252,470

Output	Operating income	20,208	28,224	40,358	53,131
	Earning	7,603	16,432	27,423	38,127
2019					
Input	Third-party fund	5,490,479	5,503,084	5,700,860	6,287,702
	Asset	135,378	137,391	138,555	141,642
	Operating cost	84,752	158,031	239,817	391,853
	Capital	37,660	37,660	37,660	37,660
Output	Financing	4,353,127	4,485,555	4,633,696	4,742,972
	Operating income	16,650	30,353	46,686	141,016
	Earning	15,301	34,684	54,949	80,323

Source: Financial Services Authority

Table 4.8 deals with the performance of bank mandiri syariah based on variables such as third-party funds, fixed assets, operating costs, capital, financing, operating income, and earnings or net income in the 2017–2019 period. The performance of Bank Mandiri Syariah in 2017 had been very good in several lines, such as in the collection of third-party funds, which was very large, and the average amount of third-party funds collected was 4 billion US dollars. If it were compared with the two banks before, BRI Syariah and BNI Syariah, Bank Mandiri Syariah was far above both of them in collecting third-party funds. However, on the financing side, it was distributed quite widely compared to BRI syariah and BNI syariah, where 84% of the collected funds can be distributed through financing.

In terms of operating income and earnings, Bank Mandiri Syariah recorded a significant increase. In 2017, the average improvement in operating income was 83.45%, and the highest improvement was in the 3rd quarter of 151%. Similarly, earnings managed to increase excellently, and the average increase in growth was 61.5% in 2017. However, in 2018, Bank Mandiri Syariah experienced a decrease in operating costs of 54.3% over 2017. Although operating costs decreased in 2018, earnings or net profit could increase by 1.95% from 2017, and the average growth in 2018 was 74%. Then, BNI Syariah managed to increase operating income significantly again in the 4th quarter of 2019 by 202%. Simultaneously, the earnings of Bank Mandiri Syariah are quite good, as can be seen from the average growth of 77% when compared to 2018, which only averaged 74% growth.

Subsequently, this study aims to evaluate the effectiveness of Bank Mandiri Syariah from 2017 to 2019 by analysing the data provided in table 4.8. In addition, this study utilises DEA to examine the efficiency of Bank Mandiri Syariah. The findings are presented below.

Table 4. 9: Evaluation of the Efficiency of Bank Mandiri Syariah for the Period of 2017 to 2019

Bank Mandiri Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1	1	1	1
	2018	1	0.98	1	1
	2019	1	1	1	1

Source: DEAP-xp

As indicated by Table 4.9, Bank Mandiri Syariah's efficiency from 2017 to 2019 is below-average. In the second quarter of 2018, Bank Mandiri Syariah was inefficient, with an efficiency score of just 0.98%. The amount of money that Bank Mandiri Syariah collects from third parties has decreased by 0.2%. Conversely, Bank Mandiri Syariah lowers operational costs over each of those three years, with the exception of 2019. In addition, Bank Mandiri Syariah was receiving higher operating income at that point in 2019, and that income doubled by the third quarter of the same year. This condition is in accordance with the claim made by (Kamarudin, F., et.al., 2019) regarding revenue and cost efficiency, a bank can increase income while maintaining the same level of output by lowering its operational costs, so that condition is a efficiency condition in 2019.

4.1.4. Efficiency of Bank Before Merger

In this sub-chapter, this study adds the values of input and output variables of the three Islamic banks, and then this study names the three Islamic banks as banks before the merger. The following are the input and output values of the three Islamic banks after being summed up.

Table 4. 10: Input and Output Variables from Three Islamic Banks on Total in the Period of 2017–2019 (In Thousands of Dollars)

	Variable	Q1	Q2	Q3	Q4
2017					
Input	Third-party funds	7,550,345	7,744,146	8,047,368	8,419,000
	Asset	177,845	179,069	179,027	180,229
	Operating cost	132,058	268,193	433,821	583,530
	Capital	32,539	39,911	43,521	43,522
output	Financing	7,083,990	6,232,522	6,280,044	6,493,726
	Operating income	18,808	35,641	77,434	95,296
	Earning	12,612	26,055	39,721	48,172
2018					
	Third-party fund	9,060,868	8,923,243	9,044,411	9,564,873

Input	Asset	185,041	187,178	188,641	199,994
	Operating cost	160,509	292,841	444,246	620,157
	Capital	44,158	44,158	50,458	56,758
Output	Financing	6,568,829	6,817,416	7,129,184	7,417,514
	Operating income	39,325	51,478	73,504	103,744
	Earning	17,139	37,106	56,485	71,054
2019					
Input	Third-party fund	9,705,908	9,561,254	9,840,467	11,194,956
	Asset	200,520	202,457	205,263	218,634
	Operating cost	158,996	303,622	466,724	708,683
	Capital	56,758	62,672	62,672	62,672
Output	Financing	7,641,682	7,997,539	8,252,590	8,524,807
	Operating income	30,871	49,737	77,293	188,467
	Earning	25,721	56,785	87,608	122,983

Source: Financial Service Authority

Table 4.10 describes the value of input and output variables belonging to the bank before the merger, which has been summed up in each quarter from 2017 to 2019. In 2017, the financing to third-party funds ratio experienced a gradual decline from the first quarter to the fourth quarter, namely that in the first quarter the ratio was 94%, the second quarter was 80%, the third quarter was 78%, and the fourth quarter was 77%. The high financing in the first quarter led to an increase in operating income and earnings for the bank before the merger. There was an increase in operating income and earning in the second quarter; operating income grew by 89.5% and net income grew by 106.6%. However, operating income and net income decreased in the 4th quarter, followed by a decrease in financing in the 3rd and 4th quarters.

Furthermore, the performance of the bank before the merger based on the input and output variables listed in Table 4.10 in 2018 was better than in 2017. In 2018, the financing to third-party funds ratio increased every quarter except in the 4th quarter, where it decreased by 1.27%. Then, the value of operating income also grew every quarter, with an average growth of 38.3%. In addition, the bank before the merger decreased the growth of operating costs, where operating costs in the second quarter grew by 82.4% from the first quarter and the value of operating costs in the fourth quarter decreased by 39.6%. Therefore, the increase in financing to third-party funds ratio, net income, and the success of the bank before the merger in managing operating costs were the success factors of the bank before the merger in 2018.

According to successful management in 2018, the bank's performance before the merger in 2019 was on a positive trend. On the financing to third party funds ratio,

the bank before the merger managed to record a fund raising of US\$11 billion in the 4th quarter, and the average growth of the financing to third party funds ratio was 80% throughout 2019. On the other hand, operating income experienced a significant increase in the 4th quarter, rising by 143.8%. In terms of operating costs, the bank before the merger also managed to reduce its growth, where the growth value was 91% in the 2nd quarter and grew to 51.8% in the 4th quarter. So, compared to 2017 and 2018, the banks' performance before the merger throughout 2019 was very good.

Afterward, this study conducts the analysis to reveal the efficiency of the bank before the merger for the period of 2017 to 2019. The efficiency analysis applies the DEA by application of DEAP-xp and the result is as follows.

Table 4. 11: Evaluation of Efficiency of Banks Pre-Merger for the Period of 2017 to 2019

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	1	0.99	1	1
	2018	1	0.98	1	1
	2019	1	1	0.99	1

Source: DEAP-xp

For the years 2017 through 2019, Bank before the merger consists of BRI Syariah, BNI Syariah, and BMS effectively controlled efficiency; according to table 4.11, efficiency had a value of 0.996 on average. Throughout that time, the bank regularly reduced operational costs before the merger. One example of this is in 2017, when the pre-merger bank dramatically reduced operating expenses to 34.5% in the fourth quarter compared to the second quarter's increase of 103.1%. Hence, the condition of the bank before the merger was consistent with the theory belong to (Kamarudin, F., et.al., 2019) that minimises operating costs by attempting to achieve cost efficiency while maintaining its level of services.

Furthermore, (Kamarudin, F., et.al., 2019) describe revenue efficiency as a bank's method of profiting from its lower-value services. As a result, Table 4.10 shows that, from 2017 to 2019, bank before the merger's operational income increased every quarter, such as the most significant growth in operating income occurred in the 4th quarter of 2019, which grew by 143.8%. As a result, the bank before the merger was

a bank that effectively controls a limited number of inputs to produce more outputs, as demonstrated by the operational income that increased between 2017 and 2019.

4.1.5. Efficiency of Bank Syariah Indonesia

BSI 2020–2022 effectiveness assessment. BSI was founded by merging BRI Syariah, BNI Syariah, and BMS. The OJK approved the merger of three Islamic banks on January 27, 2021, after the merger began in 2020. On February 1, 2021, the Indonesian president launched BSI. In 2024, BSI became the first Islamic bank with a \$20 billion asset worth (Irawati, 2024).

Table 4. 12: Input and Output Variables of Bank Syariah Indonesia in the period of 2020 – 2022 (In Thousands of Dollars)

	Variable	Q1	Q2	Q3	Q4
2020					
Input	Third-party funds	11,194,957	11,194,957	11,920,647	13,368,040
	Asset	141,457	173,638	174,563	199,635
	Operating cost	117,426	201,760	223,249	300,813
	Capital	37,660	37,660	37,660	37,660
output	Financing	8,524,807	8,761,282	9,058,529	9,395,263
	Operating income	44,538	57,389	90,117	122,530
	Earning	23,140	45,744	67,874	90,368
2021					
Input	Third-party fund	12,946,235	13,631,599	13,808,130	14,694,110
	Asset	199,635	211,440	230,065	255,512
	Operating cost	150,526	320,834	459,314	638,581
	Capital	37,660	42,485	49,077	49,077
Output	Financing	9,994,445	10,145,215	10,258,289	10,759,081
	Operating income	68,553	133,904	198,602	257,815
	Earning	46,841	94,201	143,349	190,767
2022					
Input	Third-party fund	15,026,848	15,413,042	15,445,352	16,473,118
	Asset	255,512	279,429	311,798	356,228
	Operating cost	156,549	318,236	479,781	679,543
	Capital	87,230	87,230	87,230	87,230
Output	Financing	11,148,816	12,017,321	12,553,286	13,047,683
	Operating income	83,931	178,221	278,255	355,786
	Earning	61,191	134,265	206,951	268,378

Source: Financial Service Authority

The performance of BSI in the 2020–2022 period based on third-party funds, assets, operating costs, capital, financing, operating income, and earnings refers to growth. In 2020, Bank Syariah Indonesia managed to raise third party funds of 13 billion US dollars, with the amount of funds distributed amounting to 9 billion US dollars.

Clearly, the ratio between the two was 70%, meaning that there are 30% of third-party funds that have not been channelled through financing due to the COVID-19 pandemic, which has reduced the amount of distribution or financing throughout 2020.

In 2021, the performance of Bank Syariah Indonesia was considered good because, based on the variable values in Table 4.12, all of them were growing over 2020. The most significant growth was in earnings, which grew by 111% over 2020, followed by growth in operating income and capital. In addition, financing distribution problems such as those in 2020 continue to occur in 2021. Where the ratio of financing with third-party funds was 69% in 2021, even so, the amount of financing grew by 9.2% over 2020.

Finally, the rise of each variable by an average of 34.46% indicates the exceptional performance of BSI in 2022. The capital, finance, asset, and operational income growth ratios are significant. Furthermore, the fact that BSI was able to raise the financing to third-party fund ratio to 74.46% shows that the Indonesian economy has rebounded from the COVID-19 pandemic. In the meantime, BSI's operating income increased by 37.48% and earnings increased by 40.68%. It follows that BSI was effective in fulfilling its job as a middleman and in managing productive assets to raise funding, which raised bank revenue.

Table 4. 13: Evaluation of the Efficiency of Bank Syariah Indonesia for the Period of 2020 to 2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	1	1	0.99	1
	2021	1	1	1	0.98
	2022	1	1	1	1

Source: DEAP-xp

Bank Syariah Indonesia's efficiency during 2020–2022 is highly efficient, with a value 0.997 in average. Based on Table 4.12, BSI successfully managed third-party funds as input to be distributed to customers in the form of financing, with various financing models as output. On the other hand, to achieve revenue efficiency, BSI Syariah needs to increase operating costs. As seen in Table 4.12, BSI Syariah needs to increase operating costs in order to increase operating income and earnings. Hence, when viewed from the definitions of cost efficiency and revenue efficiency,

according to (Kamarudin, F., et.al., 2019), BSI Syariah is not fully efficient because it cannot achieve revenue efficiency without increasing operating costs. However, based on analysing DEA, BSI Syariah was an efficient bank because it can distribute 74% of third-party funds, and this value continues to increase every year, which means that BSI Syariah has carried out its function as an intermediary institution.

4.1.6. Comparison of the Efficiency Between Banks Pre-and Post-Merger

In this sub-chapter, this research compares the efficiency condition of banks before the merger consisting of BRI Syariah, BNI Syariah, and BMS with the bank after merger, namely BSI. As for Bank before the merger utilises data of input dan output variables from those three Islamic banks in total for the period of 2017 to 2019 as in table 4.10 and 4.11. Meanwhile, Bank after merger utilises data from the period of 2020 to 2022 as it has been showed in table 4.10 and 4.11. However, before conducting the comparison of condition before and after the merger, this study conducts normality test on the result of efficiency owns both banks before and after the merger.

4.1.6.1. Normality Test for the Data of Bank Efficiency

Performing the normality test is an important initial step to take before making any comparisons. Running a normality test can help determine if a set of data or variables follows a normal distribution (Sugiyono, 2017). In addition, this study assumes that data follows a distribution that is normal when the test value exceeds than the value of 0.05 and deviates from normal distribution when the test value is below the value of 0.05. This is how the hypothesis is explained.

H_0 = Residual data is normally distributed

With a non-significant probability value greater than 0.05 as shown by the Kolmogorov Smirnov test, the null hypothesis is accepted, indicating that the residual data follows a normal distribution.

H_a = Residual data is not normally distributed

The findings of the Kolmogorov-Smirnov Test determine if the residual data adheres to the distribution of normality, based on a substantial probability score of 0.05 or less. This rejection of the null hypothesis indicates or demonstrates this.

A normality test with Kolmogorov-Smirnov is utilised as well, and SPSS 27 is used for data processing.

One-Sample Kolmogorov-Smirnov Test

		Before Merger	
N		12	
Normal Parameters ^{a,b}	Mean	.9967	
	Std. Deviation	.00651	
Most Extreme Differences	Absolute	.446	
	Positive	.304	
	Negative	-.446	
Test Statistic		.446	
Asymp. Sig. (2-tailed) ^c		<.001	
Monte Carlo Sig. (2-tailed) ^d	Sig.	.000	
	99% Confidence Interval	Lower Bound	.000
		Upper Bound	.000

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525.

Figure 4. 1: Normality Test with Kolmogorov-Smirnov for Bank Efficiency Pre-Merger

Source: SPSS 27

Before the merger, four Sharia banks had an asymp value, according to the Kolmogorov-Smirnov test. Significant (2-tailed) was 0.001. We could argue that the pre-merger data on the effectiveness of banks did not comply with a normal distribution since the p-score is significantly lower than 0.05, which means that the null hypothesis of normality must be denied.

One-Sample Kolmogorov-Smirnov Test

		After Merger
N		12
Normal Parameters ^{a,b}	Mean	.9975
	Std. Deviation	.00622
Most Extreme Differences	Absolute	.490
	Positive	.344
	Negative	-.490
Test Statistic		.490
Asymp. Sig. (2-tailed) ^c		<.001
Monte Carlo Sig. (2-tailed) ^d	Sig.	.000
		99% Confidence Interval
		Upper Bound .000

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 926214481.

Figure 4. 2: Normality Test with Kolmogorov-Smirnov for Bank Efficiency Post-Merger

Source: SPSS 27

A value of asymp sig. (2-tailed) 0.001 was found for bank Syariah after the merger, as determined by the Kolmogorov-Smirnov test. A non-normal distribution of the bank efficiency data previous to the merger is indicated by the fact that the test value is less than 0.05, which indicates that the null hypothesis is rejected. A comparison test using Wilcoxon's signed rank test is carried out in the following sub-chapter. This is because the efficiency statistics of both banks before and after the merger did not follow a normal distribution.

4.1.6.2. Wilcoxon Signed Rank Test on Bank Efficiency

Based on the results of the Kolmogorov-Smirnov normal test, it appears as though the distribution of bank efficiency data both prior to and after the merger is not following a normal pattern. In addition, this study analysed the efficiency conditions prior to and post-the merger using the Wilcoxon signed rank test. A thorough analysis is carried out to assess whether there is an obvious difference between the periods prior to and post the merger of Bank Syariah. Furthermore, the Wilcoxon-signed rank test utilises the SPSS Version 27 application, and the result of the comparison test is as follows:

		Ranks		
		N	Mean Rank	Sum of Ranks
After - Before	Negative Ranks	2 ^a	3.25	6.50
	Positive Ranks	3 ^b	2.83	8.50
	Ties	7 ^c		
	Total	12		

a. After < Before

b. After > Before

c. After = Before

Figure 4. 3: Rank of Efficiency Comparison Test with Wilcoxon Signed Rank Test for the Banks Pre-and Post-Merger

Source: SPSS 27

Calculations in the formulation of the Wilcoxon Signed Rank Test involve determining the average rank, the total of ranks from the negative and positive ranks groups, and accounting for ties. Furthermore, it is worth noting that the analysis reveals a decrease in efficiency after the merger compared to the pre-merger data. Specifically, two sets of efficiency data after the merger were found to be lower than the previous data. Furthermore, there are two instances where the efficiency data falls short: the third quarter of 2020 and the fourth quarter of 2021.

And positive ranks describe the efficiency value or data of after the merger is higher than the efficiency value or data of before the merger, so in the finding of analysis finds out three data of efficiency after the merger is higher than data of efficiency before the merger. Furthermore, three values do not reach the efficiency namely data of efficiency in the second quarter of 2017, the second quarter of 2018, and the third quarter of 2019.

Meanwhile, ties explain the similarity of data between the efficiency value of after the merger and before the merger. Based on the result of analysis of Wilcoxon Signed Ranks Test there is seven similarity data of efficiency during this observation.

Test Statistics^a

	After - Before
Z	-.276 ^b
Asymp. Sig. (2-tailed)	.783

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Figure 4. 4: Output of Efficiency Comparison Test with Wilcoxon Signed Rank Test for the Banks Pre-and Post-Merger

Source: SPSS 27

Based on the output of the statistics test of Wilcoxon signed ranks, the z value amounted to -0.276 and the asymptotic significance 2-tailed amounted to 0.783. Because Asymptotic Significance 2-tailed is higher than the alpha value, or 0.05, then H_0 is accepted. Hence, there is not a difference condition in bank efficiency pre-and post-merger. As for the difference, which can be found in figure 4.3, banks before the merger have three inefficiencies, while bank after the merger have two inefficiencies, it indicates that the merger policy supports three Islamic banks becoming banks after the merger, which has a better efficiency condition.

4.2. Evaluation of Bank Soundness

In this study, we will be examining the evaluation of bank soundness using the RGEC method, which takes into account factors such as Risk Profile, Good Corporate Governance, Earning, and Capital. The stability of the bank Bank health refers to a bank's ability to carry out regular banking activities and adhere to banking regulations. To ensure smooth operations, banks need to have sufficient capital, maintain high-quality assets, exhibit strong management, demonstrate profitability, possess adequate liquidity, and maintain solvency (Bank Indonesia, 2011).

According to Bank Indonesia (2011) *“the RGEC method is a method used to evaluate the performance and health of banks. It was implemented on 5 January 2011 with the aim of reducing the likelihood of future financial crises”*.

In addition, the RGEC technique improves upon the previous methodology by evaluating the stability of banks using a risk-based bank rating system. The OJK's rule number 8/POJK.3/2014 governs the evaluation of Islamic banking's state of health in the interim. According to Otoritas Jasa Keuangan (2014), this law is especially concerned with the evaluation of Islamic commercial banking institutions

and Islamic business sectors. Furthermore, this study analyses the organisation of this chapter and assesses the financial stability of every bank. Every bank is thoroughly examined in separate sub-chapters, which are structured as follows:

4.2.1. Soundness of Bank Rakyat Indonesia Syariah

The appraisal of the soundness of Bank Rakyat Indonesia Syariah from 2017 to 2019. The Risk Profile, GCG, Earnings, and Capital (RGEC) method is employed in this evaluation. Consequently, this chapter provides a sub-chapter for each of the four factors of assessment. The study commences with an evaluation of the risk profile, GCG, earnings, and capital.

4.2.1.1. Risk Profile

a) Non-Performing Financing

Table 4. 14: Evaluation of Non-Performing Financing of Bank Rakyat Indonesia Syariah for the Period of 2017 – 2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	4.71%	4.82%	4.82%	6.43%
2018	4.92%	5.13%	5.30%	6.73%	
2019	5.68%	4.98%	4.45%	5.22%	

Source: Financial statements

Based on the assessment of NPF at BRI Syariah for the period of 2017, its value experienced fluctuation. In the first quarter of 2017, BRI Syariah received an NPF of 4.71%. Then, in the second and third quarters, it increased to 4.82%. And the increase continued in the fourth quarter, reaching 6.43%, a significant increase of 33.4%. Therefore, the overall non-performing financing value of BRI Syariah is unstable because it experienced a significant increase in the fourth quarter. And BRI Syariah's average non-performing financing in 2017 was 5.20%, with satisfactory criteria.

In 2018, the value of non-performing financing for BRI Syariah increased throughout the year. In the first quarter, the value of NPF was 4.92%. In the second quarter, it grew by 4.27% over the first quarter. Then, in the third quarter, the value of NPF rose again to 5.30%, and in the fourth quarter, it grew by 27% over the second quarter to 6.73%. Thus, in 2018, the overall value of non-performing financing averaged 5.52% with satisfactory criteria.

In 2019, the value of non-performing financing at BRI Syariah decreased over 2018, yet it was still experiencing fluctuations through the period of 2019. In the first quarter of 2019, BRI Syariah received a value of NPF 5.68%. Then, in the second and third quarters of 2019, a downturn totaled 12.32% and 10.64%, respectively. However, improvements incurred in the fourth quarter amounted to 17.30% over the third quarter.

b) Financing to Deposit Ratio

Table 4. 15: Evaluation on Financing to Deposit Ratio of Bank Rakyat Indonesia Syariah for the Period of 2017 – 2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	77.56%	76.79%	73.14%	71.87%
2018	68.70%	77.78%	76.40%	75.49%	
2019	79.55%	85.25%	80.12%	80.12%	

Source: Financial statements

Table 4.15 presents an evaluation of BRI Syariah's FDR from 2017 to 2019. In the period of 2017, BRI Syariah organised the third-party funds to be distributed to customers successfully. For the first quarter of 2017, the value of FDR amounted to 77.56% with health criteria. Then, in the second quarter, there was a little bit of a decline of 4.75%, or it amounted to 76.79%. And the downturn continues in the third quarter, decreasing by 4.75%. In the final quarter of 2017, BRI Syariah recorded an FDR value of 71.87%, which was lower than the previous quarter's value of 71.87%. The average FDR value for the entire 2017 period was 74.84%, meeting very high standards.

As for the result of the assessment of the FDR of BRI Syariah in 2018, it is not much different from the value of FDR in 2017, but this year, the score of FDR is fluctuating. In the first quarter of 2018, BRI Syariah's FDR received a score of 68.70%, with a predicate of very healthy. However, the FDR of BRI Syariah experienced a significant improvement in the second quarter, rising to 13.22%. Then, in the third quarter, the FDR score decreased by 1.77%. In addition, the decline continued into the fourth quarter, amounting to 1.19%, which was becoming by 75.49%. The average FDR score for BRI Syariah during the 2018 period was 74.59%, indicating a very good performance.

Table 4.15 presents the evaluation of BRI Syariah's FDR in 2019. It was much different from the 2017 and 2018 FDR conditions, and the way BRI Syariah distributed the deposit funds was much bigger than both 2017 and 2018. In the first quarter of 2019, BRI Syariah had a FDR score of 79.55%, and in the second quarter of 2019, the score rose to 7.17%, making it 85.25%. As for the third and fourth quarters, they had the same score of 80.12%, which was a decrease of 6.02%. BRI Syariah's average FDR score was 81.26%, with a predicate of good or in the second position.

c) Assessment of the Risk Profile of BRI Syariah

Based on the assessment of the risk profile, which consists of two variables, namely NPF and FDR, it was found that BRI Syariah was in the second position of weight rating for NPF and in the first position of weight for FDR during the period of observation. In 2017, BRI Syariah had an NPF value of 5.20% with satisfactory criteria. Meanwhile, the FDR value was 74.84% with very good criteria. Furthermore, it indicates that BRI Syariah had a slightly high payment rate default, as seen from the NPF value, which was in the third position of the weight of NPF. Although BRI Syariah had a very good FDR with a value of 74.84%, The risk profile of BRI Syariah, therefore, was in a healthy or good position with the excellent financing-to-deposit ratio, even though the NPF value was in an average position.

In 2018, the risk profile of BRI Syariah was in a healthy or good position with an excellent financing-to-deposit ratio, even though the NPF value was in an average position. BRI Syariah had an NPF value of 5.52% with satisfactory criteria. Meanwhile, the FDR value was 74.59% with very good criteria. Therefore, it indicates that BRI Syariah had a slightly high payment default rate, as seen from the NPF value, which was in the third position of the weight of NPF. Although BRI Syariah had a very good FDR with a value of 74.59%.

In 2019, the risk profile of BRI Syariah was in a healthy or good position with an excellent financing-to-deposit ratio, though the NPF value was in an average position. BRI Syariah had an NPF value of 5.08% with satisfactory criteria. Meanwhile, the FDR value was 81.26% with good criteria. Therefore, it indicates that BRI Syariah had a slightly high payment default rate, as seen from the NPF

value, which was in the third position of the weight of NPF. Although BRI Syariah had a good FDR with a value of 81.26%.

4.2.1.2. Good Corporate Governance

Table 4. 16: Assessment on Good Corporate Governance of Bank Rakyat Indonesia Syariah for the Period of 2017 - 2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.72	1.88	1.41	1.57
2018	1.53	1.49	1.79	1.56	
2019	2.25	1.94	1.83	1.72	

Source: Financial statements

Based on table 4.16, an evaluation of the GCG of BRI Syariah in the period of 2017 to 2019 is presented. In the period of 2017, BRI Syariah organised corporate operations so that they operated in accordance with regulations or agreements. For the first quarter of 2017, the value of GCG amounted to 1.72% with a health predicate. Then, in the second quarter, there was a little bit of an improvement of 9.3%, or it amounted to 1.88%. However, there was a downturn in the third quarter, decreasing by 25%. Then, in the last quarter of 2017, BRI Syariah received a value of GCG that was higher than the third previous quarter, which amounted to 1.57%, and the value of GCG averagely during the period of 2017 was 1.64% with a good predicate.

As for the result of the assessment of the GCG of BRI Syariah in 2018, it is not much different from the value of GCG in 2017, but this year, the score of GCG is fluctuating. In the first quarter of 2018, BRI Syariah's GCG received a score of 1.53%, with a predicate of healthy. Then, in the second quarter, the GCG score decreased by 2.6%, or the score of GCG was 1.49. However, the GCG of BRI Syariah experienced a significant improvement in the third quarter, rising to 20.13%, or which the score was amounted to 1.79%. In addition, the decline continued into the fourth quarter, amounting to 12.84%, and the score was 1.56%. BRI Syariah's average GCG score was 1.59% during the period of 2018 with a good predicate.

In the last assessment for the GCG of BRI Syariah in 2019, BRI Syariah's GCG was decreasing through this year. In the first quarter of 2019, BRI Syariah's GCG acquired a score of 2.25%. Then, in the second and third quarters, there was a decline, namely, in the second quarter, the GCG score of BRI Syariah was 1.94%,

and in the third quarter, the GCG score of BRI Syariah was 1.83%. However, in the last quarter, BRI Syariah underwent a downturn of 11.34%, or a score of 1.72%.

Based on the assessment of the GCG of BRI Syariah, refer to the good criteria or be in the second position during the period of observation. In 2017, BRI Syariah met the good criteria in GCG with a value of 1.64% and a good predicate. Therefore, BRI Syariah had implemented the procedures issued by the central bank of Indonesia, which consist of transparency, accountability, responsibility, professionalism, as well as fairness, in a good way. And in 2018, the value of GCG was slightly the same, amounting to 1.59%, which indicates that BRI Syariah could implement the procedures issued by the central bank of Indonesia in a good way. Then, in 2019, BRI Syariah's GCG reached the good predicate, which means that BRI could manage corporations so that corporate operations operated in accordance with shareholder expectations and the procedures issued by the central bank of Indonesia.

4.2.1.3. Earning

a) Return on Asset

Table 4. 17: Assessment on Return on Asset of Bank Rakyat Indonesia Syariah for the Period of 2017-2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.74%	1.73%	1.68%	1.65%
2018	1.72%	1.70%	1.70%	1.61%	
2019	1.93%	2.03%	2.08%	1.98%	

Source: Financial statements

Table 4.17 presents the evaluation of the return on assets of BRI Syariah for the period of 2017–2019, which meets the criteria of a very good bank according to BI circular letter no. 13/24/DPNP of 2011. In the first quarter of 2017, BRI Syariah had a ROA score of 1.74%, meeting the criteria of being very healthy. Although BRI Syariah's began this year in good condition, in the next quarter, ROA experienced a downturn. In the second quarter, BRI Syariah had a ROA score of 1.73%. Then, in the third quarter, BRI Syariah's ROA incurred a downturn of 2.8%, or a score of 1.68%. And in the last quarter of 2017, BRI Syariah's ROA still incurred a downturn of 1.79%, or a score of 1.65%. In addition, the ROA of BRI Syariah in 2017 was

1.70% on average, with a very good predicate, which meant that BRI Syariah could generate profit by utilising its own assets.

Based on table 4.17, BRI Syariah's ROA score in 2018 was not much different from 2017, in which BRI Syariah received a predicate of very good. In the first quarter of 2018, BRI Syariah had a score of ROA of 1.72%, meeting the criteria of being very good. In the second and third quarters, BRI Syariah received the same score of 1.70%, or a reduction of 1.16%. In the last quarter of 2018, BRI Syariah had a score of 1.61%. As for the score of ROA average, BRI Syariah's average score of ROA is 1.68% in the very good category, which meant that BRI Syariah could generate profit by utilising its own assets.

In the last assessment for the ROA of BRI Syariah in 2019, BRI Syariah's ROA was much better than both assessments of 2017 and 2018. In the first quarter of 2019, BRI Syariah's ROA acquired a score of 1.93%. Then, in the second and third quarters, there was improvement, namely, during the second quarter, ROA score of BRI Syariah was 2.03%, and during the third quarter, ROA score of BRI Syariah was 2.08%. However, in the last quarter, BRI Syariah underwent a downturn of 4.81%, or a score of 1.98%. BRI Syariah's ROA, therefore, reached the predicate of being very good, with a 2.01% average, which meant that BRI could generate profit by utilising its own assets.

b) Net Operating Margin

Table 4. 18: Assessment on Net Operating Margin of Bank Rakyat Indonesia Syariah for the Period of 2017-2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.75%	1.84%	1.77%	1.76%
2018	1.92%	1.86%	1.82%	1.75%	
2019	2.11%	2.22%	2.29%	2.17%	

Source: Financial statements

Based on table 4.18, BRI Syariah attempted to do much better in net operating margin through three years of observation. Through 2017, BRI Syariah's net operating income fluctuated. In the first quarter of 2017, BRI Syariah successfully recorded the NOM score, which amounted to 1.75%. Then, in the second quarter, the score of NOM was 1.84, or a decrease of 5.14%. However, in the third quarter of 2017, BRI Syariah underwent a downturn of 3.8%, or a score of 1.77%. In the last

quarter of 2017, BRI Syariah still underwent a downturn, with a decrease of 0.5%. As a result, BRI Syariah had a NOM score of 1.78% with satisfactory criteria on average.

In 2018, BRI Syariah's net operating margin was still satisfactory. In the first quarter of 2018, BRI Syariah had a NOM score of 1.92 with a satisfactory predicate. BRI Syariah underwent a downturn of 3.12%, or score was 1.92% in the second quarter. Then, in the third quarter, BRI Syariah still underwent a downturn, with a score of 1.82%. And in the last quarter of 2018, BRI Syariah underwent a downturn of 3.8%, which was quite bad compared to the previous quarter.

In the period of 2019, BRI Syariah's net operating margin performed significantly better. In the first quarter of 2019, BRI Syariah had a NOM score of 2.11%. Then, BRI Syariah's NOM increased by 5.21%, or the NOM score was 2.22%. In the third quarter of 2019, BRI Syariah still increased by 3.15%, or the NOM score was 2.29%. However, BRI Syariah experienced a decline in the last quarter of 2019 that amounted to 5.2%, or a NOM score of 2.17%. BRI Syariah therefore had a score of NOM of 2.20% on average with a good predicate.

c) Operating Expenses to Operating Income

Table 4. 19: Assessment on Operating Expenses to Operating Income of Bank Rakyat Indonesia Syariah for the Period of 2017 - 2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	82.87%	81.26%	81.95%	81.81%
2018	79.90%	79.92%	79.84%	80.46%	
2019	75.35%	74.50%	74.02%	75.88%	

Source: Financial statements

The assessment of BOPO of BRI Syariah for the period of 2017 to 2019 is illustrated in Table 4.19, which indicates that the organisation has performed exceptionally well. BRI Syariah had a very high score of 82.87% for BOPO in the first quarter of 2017. Subsequently, BRI Syariah experienced a decline in the subsequent quarter of 2017, as evidenced by the BOPO score of 81.81% in the fourth quarter of 2017, which represented a 1.27% decrease from the first quarter. Through 2017, BRI Syariah maintained an exceptional average and achieved an impressive BOPO score of 81.97%.

During the second year of observation, BRI Syariah saw a slight decrease in BOPO, which is a positive development. The BOPO ratio score of 79.90% achieved by BRI Syariah in the first quarter of 2018 is a testament to its exceptional performance. Subsequently, the result experienced a substantial increase, with the BOPO ratio reaching 79.92%. BRI Syariah's BOPO ratio was 79.84% during the third quarter of 2018. BRI Syariah's BOPO demonstrated an increase of 0.77% in the final quarter of 2018. In 2018, BRI Syariah maintained an average BOPO ratio of 80%.

Table 4.19 indicates that BRI Syariah's BOPO demonstrated enhanced performance in 2019 when contrasted with the previous two years. BRI Syariah met the criteria for excellence by achieving an impressive BOPO ratio of 75.35% in the first quarter. The BOPO ratio experienced a 1.1% decline in the second quarter. The ratio of BOPO continued to decline in the third quarter. BRI Syariah achieved a commendable score of 75.88% for BOPO in the fourth quarter.

d) Assessment of Earning of BRI Syariah

After analysing the earnings, it is evident that BRI Syariah has met the criteria for good performance. This indicates that BRI Syariah has been able to generate profit in a sustainable manner. In 2017, BRI Syariah achieved a ROA value of 1.70%, which falls into the very good category. And BRI Syariah had a NOM value of 1.78%, with an average rating of satisfactory. Additionally, the operational costs to operating income ratio stood at 81.97%. Thus, BRI Syariah demonstrated a commendable ROA value, although the net operating margin remained relatively low within the satisfactory range. Therefore, BRI Syariah has the potential to generate a substantial profit based on the ROA, NOM, and BOPO ratio.

In 2018, BRI Syariah was able to generate a profit with a commendable level of profitability. BRI Syariah achieved a ROA value of 1.68%, which falls within the very good category. And BRI Syariah had a NOM value of 1.84%, with an average rating of satisfactory. Meanwhile, the BOPO ratio stood at 80.03%. Despite BRI Syariah's strong ROA value, the net operating margin remains low, indicated by the small NOM value falling within the satisfactory category. Meanwhile, BRI Syariah has achieved a high profitability rate with a BOPO ratio of 80.03%, indicating a low rate.

In 2019, BRI Syariah could generate a profit with a very good profitability value. BRI Syariah had a ROA value of 2.01% in the very good category. And BRI Syariah had a NOM value of 2.20%, with a good category on average. Meanwhile, the BOPO was 74.94%. BRI Syariah had the highest rate of ratio profit to asset with a ROA value of 2.01%, but profit from productive assets was still at the slightly high rate seen from the good NOM value in the good category. Meanwhile, according to the BOPO perspective, BRI Syariah had a high profitability rate with a ratio of BOPO of 74.94%.

4.2.1.4. Capital

Table 4. 20: Assessment on Capital Adequacy Ratio of Bank Rakyat Indonesia Syariah for the Period of 2017 - 2019

BRI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	19.35%	19.85%	20.15%	20.29%
2018	27.85%	28.12%	29.73%	29.36%	
2019	25.26%	24.86%	25.55%	25.55%	

Source: Financial statements

BRI Syariah's capital adequacy ratio (CAR) value, which was higher than the benchmark of 12% for the very robust category during the 2017–2019 period, ranged from 19% to 29%, as evidenced by the results of the CAR assessment. The CAR value of BRI Syariah for the first quarter of 2017 was 19.35%, indicating that it was a very healthy predicate. Additionally, the value of CAR increased by 2.5% in the second quarter, resulting in a 19.35% increase. Subsequently, the third and fourth quarters witnessed an extension of the enhancement. The CAR score of BRI Syariah was 20.15% in the third quarter and increased by 0.69% in the fourth quarter, resulting in a CAR value of 20.29%. Therefore, it was determined that BRI Syariah achieved a value of 19.91% in 2017 and was classified as a very excellent indicator.

Furthermore, in the period of 2018, BRI Syariah had a CAR value ranging from 27% to 29%, with a predicate of being very healthy. In the first quarter, BRI Syariah had a CAR score of 27.85%. Then, it increased slightly to 0.96% in the second quarter. And the significant improvement underwent in the third quarter was 5.72%. However, in the fourth quarter, BRI Syariah's CAR underwent a decline of 1.24%, or a score of 29.36%.

Based on table 4.20, BRI Syariah had a CAR score of 25.30% average in 2019, which was better than the CAR score in the period of 2017. In the first quarter of 2019, BRI Syariah had a score 25.26% in the category of very good. Then, in the second quarter, the decline amounted to 1.5%. However, in the third and fourth quarters, the CAR underwent an improvement of 2.77%, or a score of 25.55%.

4.2.1.5. Assessment on BRI Syariah Soundness

During the 2017–2019 period, BRI Syariah denotes a robust state of bank soundness, as determined by the results of four factors: risk profile, GCG, earnings, and capital. BRI Syariah was in the third position, which indicates satisfactory condition, and did not have the relatively high default risk rate observed in the ranking of the risk profile. The assessment of BRI Syariah's compliance with the central bank of Indonesia's procedures was in an acceptable condition, and it was ranked second according to the GCG value. Then, BRI Syariah could generate a decent profit, with a ratio of return to asset of a very high profit rate, a productive asset that could generate profit, and a ratio of BOPO of a low rate. Additionally, the BRI Syariah capital adequacy ratio was exceedingly favourable. BRI Syariah is regarded as a resilient and sturdy bank that can withstand potential adverse consequences of shift in the business surroundings, as per the RGEC method. The bank's profitability, capitalization, risk profile, and implementation of GCG practices are all highly regarded.

4.2.2. Soundness of Bank Negara Indonesia Syariah

The assessment of the soundness of BNI Syariah from 2017 to 2019. The RGEC method is employed in this evaluation. Consequently, this chapter provides a sub-chapter for each of the four factors of assessment as follows.

4.2.2.1. Risk Profile

a) Non-Performing Financing

Table 4. 21: Assessment on Non-Performing Financing of Bank Negara Indonesia Syariah for the Period Of 2017 - 2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	3.16%	3.38%	3.29%	2.89%
	2018	3.18%	3.04%	3.08%	2.93%
	2019	2.90%	3.03%	3.05%	3.33%

Source: Financial statements

Its value fluctuated in accordance with the 2017 evaluation of NPF at BNI Syariah. 3.16% was the NPF value that BNI Syariah received in the first quarter of 2017. Then, it rose to 3.29% throughout the second and third quarters. Nevertheless, the decline in the fourth quarter was 12.15%, or 2.89% of the NPF. Consequently, BNI Syariah's overall NPF value is unstable as a consequence of a substantial decline in the fourth quarter. Additionally, in 2017, BNI Syariah's average NPF was 3.18%, which met good criteria.

Throughout 2018, the NPF value of BNI Syariah decreased. The NPF value was 3.18% during the first quarter. In comparison to the first quarter, it experienced a 4.4% decline during the second quarter. Afterward, the value of NPF remained unchanged from the second quarter throughout the third quarter. However, during the fourth quarter, it decreased by 4.87% compared to the third quarter, resulting in a 2.93% decrease in NPF value. Therefore, the average value of NPF in 2018 was 3.06%, which is a suitable predicate.

The value of NPF at BNI Syariah decreased in 2018, but it increased in 2019. An NPF of 2.90% was received by BNI Syariah in the first quarter of 2019. Afterward, an improvement of 3.03% and 3.05% was observed during the second and third quarters of 2019. Nevertheless, the fourth quarter demonstrated a 9.18% increase in comparison to the third quarter.

b) Financing to Deposit Ratio

Table 4. 22: Assessment on Financing to Deposit Ratio of Bank Negara Indonesia Syariah for the Period of 2017 - 2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	82.32%	84.44%	81.40%	80.21%
	2018	71.98%	77.42%	80.03%	79.62%
	2019	76.42%	87.07%	84.74%	74.31%

Source: Financial statements

Table 4.22 presents an evaluation of BNI Syariah's financing-to-deposit ratio (FDR) from 2017 to 2019. In 2017, BNI Syariah successfully arranged the distribution of third-party funds to its customers. Throughout the first quarter of 2017, the FDR achieved a healthy value of 82.32%. Then, in the second quarter, there was a little bit of an improvement of 2.57%, or it amounted to 84.44%. However, the downturn

happened in the third quarter, decreasing by 3.73%. In the final quarter of 2017, BNI Syariah recorded a lower FDR value of 80.21% compared to the previous quarter, and the average FDR value for the entire 2017 period was 82.09%, meeting the good criteria.

Table 4.22 presents the evaluation of the FDR of BNI Syariah in 2018, which was much different from the conditions of the FDR in 2017, in which BNI Syariah distributed the deposit funds less than in 2017. In the first quarter of 2018, BNI Syariah had an FDR score of 71.98%; in the second quarter of 2018, it rose to 77.55%, so the FDR score was 77.42%. As for the third, it had a score of 80.03%, and it decreased a little bit to 77.02% in the fourth quarter. The average FDR score for BNI Syariah was 77.26%, indicating a strong performance, placing it in the second position.

The result of the assessment of BNI Syariah's financing-to-deposit ratio in 2019 was not significantly different from the value of FDR in 2017, but this year, the FDR score fluctuated. In the first quarter of 2019, BNI Syariah's FDR received a score of 76.42%, with a good predicate. However, the FDR of BNI Syariah experienced a significant improvement in the second quarter, rising to 87.93%, or the score of FDR was 87.07%. Then, in the third quarter, the FDR score decreased by 2.33%. Furthermore, the decline continued into the fourth quarter, and it was significant at 74.31%, with a score of 74.31%. The average FDR score for BNI Syariah in 2019 was 80.31%, indicating a good performance.

c) Assessment of the Risk Profile of BNI Syariah

Based on the assessment of the risk profile that consists of two variables namely NPF and FDR find out that Bank Negara Indonesia was in the second position of weight rating of NPF and in the second position of weight of FDR during the period of observation. In 2017, BNI Syariah had NPF value of 3.18% with good criteria. Meanwhile the FDR value was 82.09% with good criteria. Furthermore, it indicates that BNI syariah had the low payment default rate seen from NPF value that was in the second position of weight of NPF. On the other hand, BNI Syariah had a good FDR with value of 82.09%. Risk profile of BNI Syariah, therefore, was in the healthy or good position with the good financing to deposit ratio, while NPF value was in the good position.

In 2018, the risk profile of BNI Syariah was in a healthy or good position, with a favourable financing-to-deposit ratio, and the NPF value was in a good position. Good criteria were met by BNI Syariah, which had an NPF value of 3.06%. In the interim, the FDR value was 77.26%, which met the established criteria. Consequently, it suggests that BNI syariah had a low payment default rate, as evidenced by the NPF value, which was in the second position of the NPF weight. In the interim, BNI Syariah maintained a favourable FDR with a value of 77.26%.

With a reasonable financing to deposit ratio and a good NPF value, BNI Syariah's risk profile was in good shape in 2019. BNI Syariah met all criteria with an NPF value of 3.08%. Additionally, meeting good criterion, the FDR value was 80.64%. Based on the NPF value, which was the second most important factor, it can be concluded that BNI Syariah had a low payment default rate. In the meantime, BNI Syariah's FDR value of 80.64% was quite good.

4.2.2.2. Good Corporate Governance

Table 4. 23: Assessment on Good Corporate Governance of Bank Negara Indonesia Syariah for the Period of 2017 - 2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	2.00	2.33	2.45	2.48
2018	2.37	2.46	2.50	2.36	
2019	2.20	2.46	2.49	2.30	

Source: Financial statements

An assessment of BNI Syariah's Good Corporate Governance (GCG) from 2017 to 2019 was provided in accordance with table 4.23. Throughout 2017, the value of BNI Syariah's GCG increased. BNI Syariah organised its corporate operations in 2017 to ensure that they are in compliance with regulations or agreements. The value of GCG was 2.00% with a robust predicate during the first quarter of 2017. Next, there was a 15% improvement in small increments during the second quarter, which equated to 2.30%. Subsequently, the third quarter witnessed an additional 6.52% increase in growth. Next, in the final quarter of 2017, BNI Syariah received a GCG value that was higher than the third previous quarter, totalling 2.48%. The average GCG value during the 2017 period was 2.1%, with a favourable predicate.

As for the assessment finding of the GCG of BNI Syariah in 2018, it is not much different from the value of GCG in 2017, but this year, the score of GCG is

fluctuating. In the first quarter of 2018, BNI Syariah's GCG received a score of 2.37%, with good predicate. However, the GCG of BNI Syariah experienced a little bit improvement in the second quarter, rising to 3.79%, or the score of FDR was 2.46%. Then, in the third quarter, the GCG score still improved by 1.62%. In addition, the decline continued into the fourth quarter, and the decline was significant at 5.6%, with a score of 2.36%. BNI Syariah's score of GCG averagely was 2.42% during the period of 2019 with good predicate.

The value of excellent corporate governance at BNI Syariah decreased in 2019 compared to 2018, but it fluctuated throughout the year. A GCG of 2.20% was received by BNI Syariah in the first quarter of 2019. Then, in both the second and third quarters of 2019, there was a 2.46% and 2.49% improvement, respectively. Nevertheless, the fourth quarter experienced a 7.63% decrease in comparison to the third quarter.

Based on assessment of GCG of BNI Syariah refer to good criteria or in the second position during the period of observation. During 2017, BNI syariah reached the good criteria in GCG with the value of 2.30% with good predicate. Therefore, BNI Syariah had implemented the procedures issued by central bank of Indonesia which consists of transparency, accountability, responsibility, professional, and fairness in good way. And throughout 2018, the value of GCG was the slightly same amounted to 2.42%, it indicates that BNI Syariah could implement the procedures issued by central bank of Indonesia in good way. Then, in 2019 BNI Syariah's GCG reached the good predicate, which means that BNI could manage corporate so that corporate operational operates in accordance with shareholder expectations and the procedures issued by central bank of Indonesia.

4.2.2.3. Earning

a) *Return on Asset*

Table 4. 24: Assessment on Return on Asset of Bank Negara Indonesia Syariah for the Period of 2017 - 2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.40%	1.48%	1.44%	1.31%
	2018	1.35%	1.42%	1.42%	1.42%
	2019	1.66%	1.97%	1.91%	1.82%

Source: Financial statements

Table 4.24 presents the evaluation of BNI Syariah's ROA for the period 2017–2019, which meets the criteria of a healthy bank according to BI circular letter no. 13/24/DPNP of 2011. In the first quarter of 2017, BNI Syariah had a ROA score of 1.40%, meeting the criteria for being healthy. Although BNI Syariah began this year in good condition, ROA experienced an improvement in the next quarter. In the second quarter, BNI Syariah had a ROA score of 1.48%. Then, in the third quarter, BNI Syariah's ROA incurred a downturn, with a score of 1.68%. And in the last quarter of 2017, BNI Syariah's ROA still suffered a 9% downturn, or 1.31% score. In addition, the ROA of BNI Syariah in 2017 was 1.41% average, with a predicate of being healthy, which means that BNI Syariah could generate profit by utilising its own assets.

Based on table 4.24, BNI Syariah's ROA score in 2018 was not much different from 2017, in which BNI Syariah received a predicate of healthy. In the first quarter of 2018, BNI Syariah had a ROA score of 1.35%, meeting the criteria for being healthy. In the second to fourth quarters, BNI Syariah received the same score of 1.42%, or an improvement of 5.18%. As for the score of ROA in average, BNI Syariah's average score of ROA was 1.40% with a predicate of healthy, which means that BNI Syariah could generate profit by utilising its own assets.

In the last assessment for the ROA of BNI Syariah in 2019, BNI Syariah's ROA was much better than both assessments of 2017 and 2018, with a predicate of very healthy. In the first quarter of 2019, BNI Syariah's ROA acquired a score of 1.66%. Then, during the second and third quarters, there was improvement; throughout the second quarter, BNI Syariah's ROA score was 1.97%, and in the third quarter, it was 1.91%. However, in the last quarter, BNI Syariah underwent a downturn of 4.71%, or a score of 1.82%. BNI Syariah's ROA, therefore, reached the predicate of being very healthy, with a 1.84% average, which means that BNI could generate profit by utilising its own assets very well.

b) Net Operating Margin

Table 4. 25: Assessment on Net Operating Margin of Bank Negara Indonesia Syariah for the Period of 2017–2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	0.73%	0.77%	0.69%	0.76%
	2018	0.54%	0.78%	0.80%	0.81%

	2019	0.91%	1.37%	1.24%	1.00%
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Source: Financial statements

Based on Table 4.25, BNI Syariah attempted to do much better in net operating margin through three years of observation. In 2017, BNI Syariah's net operating income fluctuated. In the first quarter of 2017, BNI Syariah successfully recorded the NOM score, which amounted to 0.73%. Then, in the second quarter, the NOM score amounted to 0.77%. However, in the third quarter of 2017, BNI Syariah underwent a downturn of 10.38%, or a score of 0.69%. In the last quarter of 2017, BNI Syariah underwent improvement, with an increase of 10.14%. BNI Syariah, therefore, had a NOM score of 0.74%, indicating an unhealthy in average.

In 2018, BNI Syariah's net operating margin was still in the predicament of being unhealthy. In the first quarter of 2018, BNI Syariah had a NOM score of 0.54%, indicating that it was unhealthy. In the second quarter, BNI Syariah improved by 44%, or the NOM score was 0.78%. Then, in the third quarter, BNI Syariah still underwent improvement, with a score of 0.80%. And in the last quarter of 2018, BNI Syariah still improved by 1.24%, which was a significant improvement from the previous quarter.

In 2019, BNI Syariah's net operating margin performed significantly better. In the first quarter of 2019, BNI Syariah had a NOM score of 0.91%. Then, BNI Syariah's NOM increased by 50.54%, or the NOM score was 2.22% during the second quarter of 2019. However, throughout the third quarter of 2019, BNI Syariah underwent a decline of 9.48%, or the NOM score of 1.24%. Then, BNI Syariah underwent a decline in the last quarter of 2019 was 19.35%, or the NOM score of 1%. BNI Syariah, therefore, had a NOM score of 1.13%, indicating that it was less healthy.

c) Operating Expenses to Operating Income

Table 4. 26: Assessment on Operating Expenses to Operating Income of Bank Negara Indonesia Syariah for the Period of 2017 - 2019

BNI Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	87.29%	86.50%	87.62%	87.62%
2018	86.53%	85.43%	85.49%	85.37%	
2019	82.96%	79.85%	80.67%	81.26%	

Source: Financial statements

The assessment of BOPO of BNI Syariah for the period of 2017 to 2019 is illustrated in Table 4.26, which indicates that BOPO performed well. In the first quarter of 2017, BNI Syariah maintained a BOPO score of 87.29% with a predicate of robust. Then, in the second quarter of 2017, BNI Syariah's BOPO decreased by 0.90% in comparison to the first quarter. Nevertheless, BNI Syariah achieved a BOPO score of 87.62% in the third and fourth quarters, which was identical to the previous quarter's score. Furthermore, BNI Syariah achieved an impressive BOPO score of 84.72%, which indicates that it will maintain a robust average throughout 2017.

BNI Syariah's BOPO ratio experienced a modest improvement on average during the second year of observation. The BOPO was not effectively managed by BNI Syariah in the first quarter of 2018, as evidenced by a score of 86.53%. Subsequently, the score experienced a decline, and the BOPO ratio was 85.43%. BNI Syariah's BOPO ratio was 85.49% in the third quarter of 2018. In the final quarter of 2018, BNI Syariah's BOPO experienced a 1.34% increase in comparison to the first quarter of 2018. Ultimately, BNI Syariah achieved a BOPO score of 85.37% during the 2018 average, which was higher than the BOPO score in 2017.

It is evident from Table 4.26 that BNI Syariah's BOPO demonstrated superior performance in 2019 compared to the previous year. The BOPO score of BNI Syariah was 82.96% in the first quarter, which was considered to be very healthy. Then, in the second quarter, the BOPO ratio experienced a decline of 3.74% compared to the first quarter. The BOPO ratio experienced an increase during the third quarter. Throughout the fourth quarter, BNI Syariah's BOPO score was 81.26%, signifying that it was in excellent health.

d) Assessment of Earning of BNI Syariah

Based on the assessment of earning that comprises of three variables are return on assets, net operating margin and BOPO, BNI Syariah reached the satisfactory criteria during the period of observation which indicates that BNI Syariah could generate profit in satisfactory way as well as in a sustainable way. In 2017, BNI Syariah had ROA value of 1.41% with the good category. And BNI Syariah had NOM value of 0.74% with very poor category in average. Meanwhile, the value operating expenses to operating income was slightly high amounted to 84.72%.

Therefore, all variables of earning indicate that BRI Syariah's profit value is the slightly high according to ROA value, but profit value could be generated by productive asset was in the very low rate seen from NOM value of 0.74%. Meanwhile, according to BOPO perspective, BNI Syariah constitutes the slightly high profitability rate with ratio of BOPO was the slightly high rate of 84.72%. Hence, BRI Syariah could generate the profit in satisfactory way seen from value of ROA, NOM, and operating expenses to operating income.

In 2018, BNI Syariah could generate the profit with a fairly good profitability value. BNI Syariah had ROA value of 1.40% with the good category. And BNI Syariah had NOM value of 0.73% with very poor category in average. Meanwhile, the value of BOPO was amounted to 85.71%. Therefore, all variables of earning indicate that BNI Syariah's profit value is the slightly high according to ROA value, but profit value could be generated by productive asset was in the very low rate seen from NOM value of 0.73%. Meanwhile, according to BOPO perspective, BNI Syariah constitutes the slightly high profitability rate with ratio of BOPO was the slightly high rate of 85.71%. Hence, BNI Syariah could generate the profit in satisfactory way seen from value of ROA, NOM, and BOPO.

In 2019, BNI Syariah was able to generate a profit with a strong profitability value. BNI Syariah achieved a ROA value of 1.84%, which falls into the very good category. BNI Syariah had a NOM value of 1.13% and was categorised as poor in performance. Meanwhile, the BOPO value reached 81.19%, indicating a very good performance. Based on the earnings variables, it is evident that BNI Syariah has a high profit value as indicated by the ROA value. However, the profit value generated by productive assets is relatively low, as seen from the NOM value of 1.13%. Meanwhile, from a financial perspective, BNI Syariah has shown a relatively high profitability rate, with a BOPO ratio of only 81.19%. Therefore, BNI Syariah was able to generate profits in a positive manner, as evidenced by the value of ROA, NOM, and BOPO.

4.2.2.4. Capital

Table 4. 27: Assessment on Capital Adequacy Ratio of Bank Negara Indonesia Syariah for the Period of 2017 - 2019

	Evaluation in	Q1	Q2	Q3	Q4
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BNI Syariah	2017	19.88%	20.10%	20.33%	20.17%
	2018	19.24%	19.26%	20.31%	20.17%
	2019	18.88%	18.55%	19.36%	18.98%

Source: Financial statements

Based on the assessment of the CAR, it is evident that BNI Syariah had a CAR score ranging from 18% to 20% during the period of 2017-2019. This exceeds the benchmark of 12% for the very healthy category. In the first quarter of 2017, BNI Syariah had a CAR value of 19.88%, indicating a very healthy predicate. In regards to the second quarter, the value of CAR experienced a 1.10% increase, or the value of the car rose by 20.10%. Then, the improvement continued in the third quarter, BNI Syariah had a score of CAR of 20.33%. However, the fourth quarter the score of CAR underwent decline of 0.78% or the value of CAR was 20.17%. Hence, it was concluded that BNI Syariah during the period 2017 reached very healthy category with value of 20.12%.

In the second year of observation, BNI Syariah's value of CAR decreased slightly on average. In the first quarter of 2018, BNI Syariah had managed capital adequacy ratio well, with a score of 19.24%. Then, the score underwent an improvement in the second quarter, and the capital adequacy ratio was 19.26%. In the third quarter of 2018, BNI Syariah had a capital adequacy ratio of 20.31%. And in the last quarter of 2018, BNI Syariah's capital adequacy ratio underwent decline, which amounted to 0.68% compared to the third quarter of 2018. Eventually, BNI Syariah had a score of capital adequacy ratio of 19.74% during the 2018 average, which the score was smaller than the score of CAR in 2017.

In 2019, the value of capital adequacy ratio at BNI Syariah decreased over 2018, but in 2019, the value of CAR was fluctuated through the period of 2019. In the first quarter of 2019, BNI Syariah received CAR of 18.88%. Then, in the second quarters of 2019, the score of CAR underwent decline slightly was amounted 1.74%. And in the third quarter of 2019, the score of CAR increased of 4.36% or the value of CAR was 19.36%. However, the fourth quarter saw decreasing of 1.96% compared to the third quarter. Hence, the average score of CAR owned BNI Syariah during the period of 2019 was very healthy predicate with the score of 18.94%.

4.2.2.5. Assessment on BNI Syariah Soundness

Based on the results from 4 factors of bank soundness namely risk profile, GCG, earning, and capital, that BNI Syariah refers to very healthy condition during the period of 2017-2019. BNI Syariah did not have the high default risk rate seen from the raking of risk profile was in the low rate in general. Meanwhile, assessment of BNI Syariah compliance to central bank of Indonesia's procedures was in good condition in which according to GCG value was in the second position. Then BNI Syariah could generate the profit in good way, in which ratio return to asset was in the very high profit rate as well as productive asset could generate profit and having ratio of BOPO was in the quite low rate. And BNI Syariah capital adequacy ratio was qualified even very good. In terms of resilience to external influences and changes in business conditions, the RGEC approach ranks BNI Syariah as a strong bank. The fact that it scored well on evaluation criteria like capitalization, profitability, risk profile, and GCG implementation lend credence to this.

4.2.3. Soundness of Bank Mandiri Syariah

The assessment of soundness of Bank Mandiri Syariah for the period of 2017 to 2019. This assessment uses Risk Profile, GCG, Earning, and Capital (RGEC) method. Therefore, this chapter has sub-chapter for 4 factors of assessment is as follow.

4.2.3.1. Risk Profile

a) Non-Performing Financing

Table 4. 28 Assessment on Non-Performing Financing of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank Mandiri Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	4.91%	4.85%	4.69%	4.53%
	2018	3.97%	3.97%	3.65%	3.28%
	2019	3.06%	2.89%	2.66%	2.44%

Source: Financial statements

Based on the 2017 assessment of non-performing financing at Bank Mandiri Syariah, its value was quite stabled. In the first quarter of 2017, Bank Mandiri Syariah received an NPF value of 4.91%. Then, in the second and third quarters decreased 1.22% compared to the first quarter and 3.29% compared to the second quarter. And in the fourth quarter still decreased was amounted to 3.41%, or the

score of NPF was 4.53%. As a result, Bank Mandiri Syariah's overall NPF value is good enough due to a reduction through the 2017. And in 2017, Bank Mandiri Syariah's average NPF was 4.75%, with good criteria.

In 2018, Bank Mandiri Syariah's NPF value decreased throughout the year. Throughout the first quarter and the second quarter, the score of NPF was same of 3.97% with a good predicate. Then, in the third quarter, the value of NPF decreased of 8% over the second quarter, and in the fourth quarter, it declined by 10.13% over the third quarter, or the value of NPF was 3.28%. Thus, the overall value of NPF in 2018 averaged 3.72% with good predicate.

The value of NPF at Bank Mandiri Syariah decreased over 2018 and remained unchanged in 2019. In the first quarter of 2019, Bank Mandiri Syariah received an NPF of 3%. In the second quarter of 2019, there was a decrease of 5.55% compared to the first quarter, and this trend continued in the third quarter of 2019, with a decline of 7.95% compared to the second quarter, resulting in an NPF score of 2.66%. Then, the fourth quarter saw a decline continue, with a downturn of 8.27% compared to the third quarter.

b) Financing to Deposit Ratio

Table 4. 29: Assessment on Financing to Deposit Ratio of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank Mandiri Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017		77.75%	80.03%	78.29%
2018		73.92%	75.47%	79.08%	77.25%
2019		79.39%	81.63%	81.41%	75.54%

Source: Financial statements

Table 4.29 presents an evaluation of Bank Mandiri Syariah's financing-to-deposit ratio (FDR) from 2017 to 2019. In the period of 2017, Bank Mandiri Syariah organised the third-party funds to be distributed to customers successfully. Throughout the first quarter of 2017, the FDR score met the healthy criteria of 77.75%. Then, in the second quarter, there was a slight improvement of 2.93%, or it amounted to 80.03%. However, the downturn happened during the third quarter, decreasing by 2.17%. Throughout the final quarter of 2017, Bank Mandiri Syariah recorded an FDR value of 77.66%, which was lower than the previous quarter's

value of 77.66%. The average FDR value for the entire 2017 period was 78.43%, meeting good criteria.

Table 4.29 presents the evaluation of the FDR of Bank Mandiri Syariah in 2018, which was quite different condition from the conditions of the FDR in 2017, in which Bank Mandiri Syariah distributed the deposit funds less than in 2017. In the first quarter of 2018, Bank Mandiri Syariah had an FDR score of 73.92%; in the second quarter of 2018, it rose to 2.1%, so the FDR score was 75.47%. As for the third, it had a score of 79.08%, and it decreased a little bit to 2.31% in the fourth quarter. Bank Mandiri Syariah's average FDR score was 77.25%, with a good predicate or in the second position.

As for the result of the assessment of the FDR of Bank Mandiri Syariah in 2019, it is not much different from the value of FDR in 2017, but this year, the score of FDR was fluctuating. In the first quarter of 2019, Bank Mandiri Syariah's FDR received a score of 79.39%, with a good predicate. However, the FDR of Bank Mandiri Syariah experienced a significant improvement in the second quarter, rising to 2.82%, or the score of FDR was 81.63%. Then, in the third quarter, the FDR score decreased by 2.69%. In addition, the decline continued into the fourth quarter, and the decline was significant at 7.21%, with a score of 75.54%. Bank Mandiri Syariah's average FDR score was 79.49% during the period of 2019 with a good predicate.

c) Assessment of the Risk Profile of Bank Mandiri Syariah

Based on the assessment of the risk profile, which consists of two variables, namely NPF and FDR, it was found that BMS was in the second position of the weight rating of NPF and in the second position of the weight of FDR during the period of observation. In 2017, Bank Mandiri Syariah had a NPF score of 4.75% with good criteria. Meanwhile, the FDR value was 78.43% with good criteria. Furthermore, it indicates that Bank Mandiri Syariah had a slightly high payment default rate, as seen from the NPF value, which was in the second position of the weight of the NPF. On the other hand, Bank Mandiri Syariah had a good FDR with a value of 78.43%. The risk profile of Bank Mandiri Syariah, therefore, was in a healthy or good position with a good financing-to-deposit ratio, while the NPF value was in a good position.

In 2018, Bank Mandiri Syariah's risk profile was healthy or good with a good financing-to-deposit ratio, while the NPF value was good. BMS had an NPF value

of 3.72%, which met good criteria. Meanwhile, the FDR value was 76.43%, which meets good criteria. Therefore, it indicates that Bank Mandiri Syariah had a slightly low payment default rate, as seen from the NPF value, which was in the second position of the weight of the NPF. Meanwhile, Bank Mandiri Syariah had a good FDR, with a value of 76.43%.

In 2019, Bank Mandiri Syariah's risk profile was in a healthy or good position, with a good financing-to-deposit ratio and a good NPF value. With good criteria, BMS had an NPF score of 2.76%. Meanwhile, the FDR value was 79.49%, which meets good criteria. Therefore, it indicates that BMS had the lowest payment default rate seen from the NPF value, which was in the second position of weight of the NPF. Meanwhile, Bank Mandiri Syariah had a good FDR, with a value of 79.49%.

4.2.3.2. Good Corporate Governance

Table 4. 30: Assessment on Good Corporate Governance of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank Mandiri Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.35	1.48	1.27	1.23
	2018	1.47	1.32	1.65	1.53
	2019	1.30	1.36	1.56	1.64

Source: Financial statements

According to Table 4.30, Bank Mandiri Syariah attempted to do much better in good corporate governance (GCG) through three years of observation. Throughout 2017, Bank Mandiri Syariah's good corporate governance was fairly stable. In the first quarter of 2017, Bank Mandiri Syariah recorded excellent performance in the GCG, which amounted to 1.35. Then, in the second quarter, the GCG score amounted to 1.48. However, in the third quarter of 2017, Bank Mandiri Syariah underwent a downturn, with a GCG score of 1.27. In the last quarter of 2017, Bank Mandiri Syariah still decreased by 3.14%. Bank Mandiri Syariah, therefore, had a GCG score of 1.33, indicating a very good in average.

In 2018, Bank Mandiri Syariah maintained its excellent corporate governance status. In the first quarter of 2018, Bank Mandiri Syariah had a GCG score of 1.47, indicating that it was very good. In the second quarter, Bank Mandiri Syariah decreased by 10.20%, or the GCG score was 1.32. Then, in the third quarter, Bank

Mandiri Syariah underwent improvement, with a score of 1.65. However, in the last quarter of 2018, Bank Mandiri Syariah decreased by 7.27%, or a GCG score of 1.53.

In 2019, Bank Mandiri Syariah's good corporate governance performed significantly better than in 2018. In the first quarter of 2019, Bank Mandiri Syariah had a GCG score of 1.30. Then, Bank Mandiri Syariah's GCG increased by 4.61, or the GCG score was 1.36 in the second quarter of 2019. In addition, in the third quarter of 2019, Bank Mandiri Syariah increased again by 14.70%, or the GCG score of 1.65. Then, Bank Mandiri Syariah still underwent an improvement in the last quarter of 2019 that amounted to 5.12%, or a GCG score of 1.64. Bank Mandiri Syariah, therefore, had a GCG score of 1.46 average, indicating that it was very good criteria.

Refer to very good criterion or be in first place during the observation period based on Bank Mandiri Syariah's GCG assessment. Bank Mandiri Syariah met the excellent predicate requirement in 2017 with a GCG score of 1.33. That is why the procedures given by the Indonesian central bank—which include openness, responsibility, accountability, professionalism, and fairness—were so well executed by Bank Mandiri Syariah. In addition, GCG was 1.49 in 2018, suggesting that Bank Mandiri Syariah did a good job of carrying out the instructions given by the Indonesian central bank. As a result, Bank Mandiri Syariah was able to manage its corporate operations in line with shareholder expectations and procedures given by the central bank of Indonesia in 2019, as its GCG attained a very good criterion.

4.2.3.3. Earning

a) Return on Asset

Table 4. 31: Assessment on Return on Asset of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank Mandiri Syariah	Evaluation in	Q1	Q2	Q3	Q4
	2017	0.60%	0.59%	0.56%	0.59%
	2018	0.79%	0.89%	0.95%	0.88%
	2019	1.33%	1.50%	1.57%	1.69%

Source: Financial statements

Table 4.31 presents the evaluation of Bank Mandiri Syariah's return on assets for the period 2017–2019, which meets the criteria of a moderately healthy bank according to BI circular letter no. 13/24/DPNP of 2011. In the first quarter of 2017, Bank Mandiri Syariah had a ROA score of 0.60%, meeting a very poor predicate.

However, in the next quarter, the condition of Bank Mandiri Syariah's ROA was worse. In the second quarter, Bank Mandiri Syariah had a ROA score of 0.59%. Then, in the third quarter, Bank Mandiri Syariah's ROA incurred a downturn, with a score of 0.56%. And in the last quarter of 2017, Bank Mandiri Syariah's ROA still had a small score of 0.59. Furthermore, the average Return on Assets (ROA) for Bank Mandiri Syariah in 2017 was 0.59%, indicating a poor performance. This indicates that the bank was unable to generate profit by effectively utilising its own assets.

According to table 4.31, Bank Mandiri Syariah's ROA score in 2018 was better than in 2017, when it received a poor rating. In the first quarter of 2018, Bank Mandiri Syariah had a ROA score of 0.79%, meeting the criteria for being poor. In the second quarter, Bank Mandiri Syariah received a score of 0.89%, or an improvement of 12.65%. In addition, in the third quarter, Bank Mandiri Syariah's ROA increased by 6.7%, or the score was 0.95%. However, in the fourth quarter, the ROA decreased by 7.36%. Regarding the average ROA score, Bank Mandiri Syariah's score was 0.88%, indicating a poor performance. This suggests that the company was unable to generate profit by effectively utilising its own assets.

In the most recent evaluation of Bank Mandiri Syariah's Return on Assets (ROA) in 2019, the ROA significantly outperformed both the ROA conditions from 2017 and 2018, demonstrating a very good performance. In the first quarter of 2019, Bank Mandiri Syariah's ROA acquired a score of 1.33%. Then, during the second and third quarters, there was improvement; during the second quarter, Bank Mandiri Syariah's ROA score was 1.50%, and in the third quarter, it was 1.57%. In addition, the improvement continued in the last quarter; Bank Mandiri Syariah increased by 7.64%, or a score of 1.69%. As a result, Bank Mandiri Syariah's ROA reached the very good level, with an average of 1.52%, indicating that it was able to generate profit through effective use of its own assets.

b) Net Operating Margin

Table 4. 32: Assessment on Net Operating Margin of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank Mandiri	Evaluation in	Q1	Q2	Q3	Q4
	2017	0.68%	0.67%	0.63%	0.61%
	2018	0.89%	1.00%	1.05%	0.96%

Syariah	2019	1.46%	1.67%	1.73%	1.85%
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Source: Financial statements

According to Table 4.32, Bank Mandiri Syariah attempted to do much better in net operating margin (NOM) during its three years of observation. Throughout 2017, Bank Mandiri Syariah's net operating income was fairly stable. In the first quarter of 2017, Bank Mandiri Syariah recorded poor performance in the NOM, which was amounted to 0.68%. Then, in the second quarter, the NOM score amounted to 0.67%. However, in the third quarter of 2017, Bank Mandiri Syariah underwent a downturn, with a NOM score of 0.63%. In the last quarter of 2017, Bank Mandiri Syariah still decreased by 0.61%. Bank Mandiri Syariah, therefore, had a NOM score of 0.65%, indicating a very poor predicate on average.

In 2018, Bank Mandiri Syariah's net operating margin was still in the predicament of being unhealthy. In the first quarter of 2018, Bank Mandiri Syariah had a NOM score of 0.89%, indicating that it was unhealthy. In the second quarter, Bank Mandiri Syariah improved by 12.35%, or the NOM score was 1%. Then, in the third quarter, Bank Mandiri Syariah continued to improve, with a score of 1.05%. However, in the last quarter of 2018, Bank Mandiri Syariah decreased by 8.57%.

In 2019, Bank Mandiri Syariah's net operating margin showed a notable improvement compared to the previous years. Bank Mandiri Syariah recorded a NOM score of 1.46% in the first quarter of 2019. In the second quarter of 2019, Bank Mandiri Syariah's NOM score experienced a significant increase of 14.38%, reaching a score of 1.67%. Furthermore, during the third quarter of 2019, Bank Mandiri Syariah experienced another increase of 3.59%, with a NOM score of 1.73%. Bank Mandiri Syariah experienced a significant improvement in the last quarter of 2019, with a growth rate of 6.93% and a NOM score of 1.69%. Bank Mandiri Syariah had a NOM score of 1.68% on average, which indicates that it was satisfactory.

c) Operating Expenses to Operating Income

Table 4. 33: Assessment on Operating Expenses to Operating Income of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank Mandiri	Evaluation in	Q1	Q2	Q3	Q4
	2017		93.82%	93.89%	94.22%
2018		91.20%	90.09%	89.73%	90.68%

Syariah	2019	86.03%	83.91%	83.28%	82.89%
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Source: Financial statements

The results of the assessment of Bank Mandiri Syariah's BOPO from 2017 to 2019 are shown in Table 4.33, indicating a good performance in this area. In the first quarter of 2017, Bank Mandiri Syariah had a score of BOPO of 93.82% with a very poor predicate. Then, in the second quarter of 2017, Bank Mandiri Syariah's BOPO had quite the same score of 93.89%. However, as for the third and fourth quarters, Bank Mandiri Syariah had a score of 94.22% in BOPO, and in the fourth quarter, it was 94.44%. In addition, Bank Mandiri Syariah had a high score of BOPO of 94.09%, with a very poor predicted average during 2017.

In the second year of observation, Bank Mandiri Syariah's BOPO ratio decreased slightly on average. In the first quarter of 2018, Bank Mandiri Syariah had not managed the BOPO well, with a score of 91.20%. Then, the score underwent a downturn, and the ratio of BOPO was 90.09% in the second quarter. In the third quarter of 2018, Bank Mandiri Syariah had a BOPO ratio of 89.73%. And in the last quarter of 2018, Bank Mandiri Syariah's BOPO underwent improvement, which amounted to 1.05% compared to the third quarter of 2018. Eventually, Bank Mandiri Syariah had a score of BOPO of 90.68% during the 2018 average, which was smaller than in 2017.

Based on Table 4.33, it appears that Bank Mandiri Syariah's BOPO in 2019 had better performance than two years before. In the first quarter, Bank Mandiri Syariah had a score of BOPO of 86.03%, which was satisfactory. Then, in the second quarter, the ratio of BOPO underwent a decline of 2.46% over the first quarter. In the third quarter, the ratio of BOPO decreased. And in the fourth quarter, Bank Mandiri Syariah's score of BOPO was 82.89%, with the predicate of being very good.

d) Assessment of Earning of Bank Mandiri Syariah

Based on the assessment of earnings, which comprises three variables: ROA, NOM, and BOPO, Bank Mandiri Syariah reached the poor criteria during the period of observation, which indicates that Bank Mandiri Syariah could not generate profit in a satisfactory way. In 2017, BMS had a ROA value of 0.59% in the poor category. BMS had an average NOM value of 0.65%, placing it in the very poor category. Meanwhile, the ratio of BOPO stood at a high rate of 94.09%. Therefore, all variables of earnings indicate that Bank Mandiri Syariah's profit value is at a low

rate according to the ROA value, but profit value could be generated by productive assets at a very low rate, as seen from the NOM value of 0.65%. Meanwhile, according to the BOPO perspective, Bank Mandiri Syariah has a slightly low profitability rate, with a ratio of BOPO was the very high rate of 94.09%. Therefore, Bank Mandiri Syariah was unable to generate a satisfactory profit, as evidenced by the values of ROA, NOM, and the ratio of BOPO.

In 2018, Bank Mandiri Syariah could not generate a profit with a satisfactory profitability value. Bank Mandiri Syariah had a ROA value of 0.88% in the position of the very poor category. And BMS had a NOM value of 0.98%, with a very poor category on average. Meanwhile, the ratio of BOPO was amounted to 90.43%. Therefore, all variables of earnings indicate that Bank Mandiri Syariah's profit value is at a low rate according to ROA value, while profit value could be generated by productive assets was at a very low rate as seen from the NOM value of 0.98%. Meanwhile, according to the BOPO perspective, Bank Mandiri Syariah has a slightly low profitability rate, with a slightly high a slightly high ratio of BOPO was the slightly high rate of 90.43%. Hence, Bank Mandiri Syariah could not generate the profit in a satisfactory way, as seen from the value of ROA, NOM, and BOPO.

In 2019, Bank Mandiri Syariah could generate a profit with a good profitability value. Bank Mandiri Syariah had a ROA value of 1.52% in the very good category. And Bank Mandiri Syariah had a NOM value of 1.68% with a satisfactory category on average. Meanwhile, the value of BOPO was amounted to 84.03% with good criteria. Therefore, all variables of earnings indicate that Bank Mandiri Syariah's profit value is at a high rate according to ROA value, but profit value could be generated by productive assets and was at the average rate seen from the NOM value of 1.68%. Meanwhile, according to the BOPO perspective, Bank Mandiri Syariah has a slightly low profitability rate, with a ratio of BOPO was the low rate of 84.03%. Hence, Bank Mandiri Syariah could generate a good profit from the value of ROA, NOM, and BOPO.

4.2.3.4. Capital

Table 4. 34: Assessment on Capital Adequacy Ratio of Bank Mandiri Syariah for the Period of 2017 - 2019

Bank	Evaluation in	Q1	Q2	Q3	Q4
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Mandiri Syariah	2017	15.89	15.45	14.36	15.16
	2018	15.63	15.75	16.26	16.66
	2019	17.37	16.15	16.15	16.86

Source: Financial statements

The capital adequacy ratio (CAR) assessment results show that Bank Mandiri Syariah's CAR value ranged from 15% to 17%, surpassing the benchmark of 12% for the very good category from 2017 to 2019. In 2017, for the first quarter, Bank Mandiri Syariah had a CAR value of 15.89%, which indicated that it was a very good predicate. As for the second quarter, the value of CAR decreased by 2.7%, or the value car was 15.45%. Then, the decline continued in the third quarter; Bank Mandiri Syariah had a CAR score of 14.36%. In the fourth quarter of 2017, the value of CAR increased by 5.57%, or the value of CAR was 15.16%. Therefore, we concluded that Bank Mandiri Syariah achieved a very good category during the 2017 period, with a CAR of 15.21%.

In 2018, Bank Mandiri Syariah's capital adequacy value underwent improvement throughout 2018. Throughout the first quarter, the value of CAR was amounted to 15.63% with a predicate of very healthy. Then, during the second quarter, the score of CAR increased by 0.76% over the first quarter. The improvement continued in the third quarter of 3.2%, or the value of CAR was 16.26%. And, in the fourth quarter, the CAR score still increased by 2.46% over the third quarter, or the value of CAR was 16.66%. Thus, the overall value of CAR in 2018 averaged 16.07% with a healthy predicate.

Based on Table 4.34, it appears that Bank Mandiri Syariah's capital adequacy ratio in 2019 had better performance than two years before, with a higher CAR score. In the first quarter, Bank Mandiri Syariah had a capital adequacy ratio of 17.37%, which was a very healthy category. Then, in the second and third quarters, the same score amounted to 16.15%, or a decrease of 7.02%. In the fourth quarter, the capital adequacy ratio improved slightly to 4.39%, with the predicate of being very good. Furthermore, the score of CAR in 2019 was amounted to 16.63% on average.

4.2.3.5. Assessment on Bank Mandiri Syariah Soundness

Based on the results from 4 factors of bank soundness namely risk profile, good corporate governance, earning, and capital, that Bank Mandiri Syariah refers to satisfactory condition during the period of 2017-2019. Bank Mandiri Syariah had the

slightly high default risk rate seen from the raking of risk profile was in the quite high rate in general. Meanwhile, assessment of Bank Mandiri Syariah compliance to central bank of Indonesia's procedures was in good condition in which according to GCG value was in the second position. Then Bank Mandiri Syariah could generate the profit in satisfactory way, in which ratio return to asset was in the sufficient profit rate as well as productive asset could generate profit, but it was in the low rate and having ratio of BOPO was in the very high rate. Hence, Bank Mandiri Syariah was not profitable in general. However, Bank Mandiri Syariah capital adequacy ratio was qualified even very good. RGEC rates Bank Mandiri Syariah as moderately healthy. It can handle business and external developments that could harm it. This assessment considers risk profile, GCG implementation, profitability, and capitalization, which are generally good.

4.2.4. Soundness of Bank Before Merger

Assessing the soundness of BRI Syariah, BNI Syariah, and BMS before their merger from 2017 to 2019. This assessment utilises the RGEC method, which evaluates Risk Profile, GCG, Earnings, and Capital. This chapter includes a sub-chapter that focuses on the assessment of four factors.

4.2.4.1. Risk Profile

a) Non-Performing Financing

Table 4. 35: Assessment on Non-Performing Financing of Banks Before the Merger Indonesia for the Period Of 2017 – 2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	4.26%	4.35%	4.27%	4.62%
	2018	4.02%	4.05%	4.01%	4.31%
	2019	3.88%	3.63%	3.39%	3.66%

Source: Financial statements

According to Table 4.35, the non-performing financing of banks before the merger varied from around 2% to 5% from 2017 to 2019, which puts them in the favourable category or the second position. In 2017, the banks prior to the merger had an NPF value of 4.62%, which was the highest, while the lowest NPF value recorded was 4.26%. According to NPF's calculations, the banks ranked second in the rating weight before the merger, which suggests they were in the good category. During 2018, the banks pre-the merger had a NPF value of 4.31%, which was the highest,

while the lowest NPF value was 4.01%. This suggests that the banks before the merger were in a good category or in the second position. In 2019, the banks before the merger had an NPF value ranging from 3.39% to 3.63%. This suggests that these banks were performing well and ranked highly in terms of rating weight.

b) Financing to Deposit Ratio

Table 4. 36: Assessment on Financing to Deposit Ratio of Banks Before the Merger for the Period of 2017 – 2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	79.21%	80.42%	77.61%	76.58%
	2018	71.53%	76.89%	78.50%	77.45%
	2019	78.45%	84.65%	82.09%	76.66%

Source: Financial statements

Based on table 4.36, the FDR of banks prior to the merger showed fluctuations ranging from approximately 71% to 85% between 2017 and 2019. In 2017, the banks prior to the merger had an FDR value of 80.42%, which was the highest, while the lowest FDR value recorded was 76.58%. Based on FDR calculations, the banks before the merger were ranked second in the rating weight, suggesting they were in the good category. In 2018, the banks before the merger had a range of FDR values, with the highest value at 78.50% and the lowest value at 71.53%. This suggests that the banks before the merger were performing well or in a strong position. In 2019, the banks before the merger had an FDR value range of 76.66% to 84.65%, which placed them in the good category or in the second position of rating weight. Thus, prior to the merger, banks had an average FDR value of 78.34, placing them in the second position in the FDR rating weight.

c) Assessment of the Risk Profile of Bank Before Merger

The risk profile assessment, based on two variables NPF and FDR, revealed that Bank Before the Merger ranked second in both the NPF weight rating and the FDR weight rating during the observation period. In 2017, the bank prior to the merger achieved an NPF value of 4.38%, meeting the criteria for good performance. Meanwhile, the FDR value was 78.46%, which meets good criteria. Furthermore, the NPF value, which ranked second in terms of weight, indicates that the bank had a slightly high payment default rate prior to the merger. On the other hand, the bank before the merger had a good FDR with a value of 78.46%. The risk profile of the

bank before the merger, therefore, was in a healthy or good position, with a good financing-to-deposit ratio as well as a good NPF value was in the good position.

In 2018, the bank's risk profile was in a healthy or good position prior to the merger, with a good financing-to-deposit ratio and a good NPF value. The bank before the merger had an NPF value of 4.10% with good criteria. Meanwhile, the FDR value was 76.09%, which meets good criteria. Therefore, it suggests that the bank prior to the merger had a slightly elevated payment default rate, as evidenced by the NPF value, which ranked second in terms of weight. Meanwhile, the bank before the merger had a good FDR with a value of 76.09%.

In 2019, the bank's risk profile was in a healthy or good position prior to the merger, with a good financing-to-deposit ratio and a good NPF value. The bank before the merger had an NPF value of 3.64% with good criteria. Meanwhile, the FDR value was 80.46% with good criteria. Therefore, it suggests that the bank prior to the merger had a slightly lower payment default rate, as evidenced by the NPF value, which ranked second in terms of weight. Meanwhile, the bank before the merger had a good FDR with a value of 80.46%.

4.2.4.2. Good Corporate Governance

Table 4. 37: Assessment on Good Corporate Governance of Banks Before the Merger for the Period of 2017 – 2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.69	1.89	1.71	1.76
	2018	1.79	1.76	1.98	1.82
	2019	1.74	1.82	1.84	1.79

Source: Financial statements

Based on table 4.37, the corporate governance (GCG) of banks prior to the merger ranged from approximately 1.5 to 2.5 between 2017 and 2019. This suggests that the banks before the merger were classified as good or in the second ranking. In 2017, banks prior to the merger had a GCG value of 1.89, which was the highest, while the lowest GCG value recorded was 1.69. According to GCG's calculations, banks held the second position in the rating weight before the merger, which suggests they were in a good category. In 2018, the banks before the merger had a GCG value ranging from 1.76 to 1.98. This suggests that these banks were performing well and ranked in the good category or second position. In 2019, the banks before the merger had a

GCG value range of 1.74 to 1.84, placing them in the good category or second position of rating weight.

4.2.4.3. Earning

a) Return on Asset

Table 4. 38: Assessment on Return on Asset of Banks Before the Merger the Period of 2017- 2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.25%	1.27%	1.23%	1.18%
	2018	1.29%	1.34%	1.36%	1.30%
	2019	1.64%	1.83%	1.85%	1.83%

Source: Financial statements

Based on the data in table 4.38, it can be observed that the ROA of banks prior to the merger experienced fluctuations between 1.18% and 1.85% from 2017 to 2019. During 2017, the banks that were involved in the merger had a range of ROA values. The highest value reached 1.27%, while the lowest value was 1.18%. According to FDR's calculations, the banks ranked third in terms of rating weight in 2017. This suggests that they were in a satisfactory category, with an average ROA value of 1.23%. In 2018, the banks before the merger had a high ROA value of 1.36%, while the lowest ROA value was 1.29%. This suggests that the banks before the merger were performing well and were in a good position. In 2019, the banks prior to the merger achieved a high ROA value of 1.85% and a low ROA value of 1.64%. This suggests that they were performing exceptionally well and were likely ranked first in terms of rating weight. Thus, prior to the merger, banks had an average ROA value of 1.45%, suggesting that they held a respectable position in terms of the rating weight of ROA.

b) Net Operating Margin

Table 4. 39: Assessment on Net Operating Margin of Banks Before the Merger for the Period of 2017–2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	1.05%	1.09%	1.03%	1.04%
	2018	1.12%	1.21%	1.22%	1.17%
	2019	1.49%	1.75%	1.75%	1.67%

Source: Financial statements

Based on the data in table 4.39, it can be observed that the NOM of banks before the merger experienced fluctuations between 1.03% and 1.75% from 2017 to 2019. In 2017, the banks prior to the merger had a NOM value of 1.09%, which was the highest, while the lowest NOM value was 1.03%. According to the calculations, the banks ranked fourth in the rating weight in 2017, which suggests a poor category with an average NOM value of 1.05%. In 2018, the banks before the merger had a NOM value of 1.22%, which was the highest, while the lowest NOM value was 1.12%. This suggests that the banks before the merger were in the poor category or in the fourth position. In 2019, the banks before the merger had a range of NOM values, with the highest at 1.75% and the lowest at 1.49%. This suggests that the banks before the merger were rated as satisfactory or in the third position in terms of rating weight.

c) Operating Expenses to Operating Income

Table 4. 40: Assessment on Operating Expenses to Operating Income of Banks Before the Merger for the Period of 2017–2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	87.99%	87.22%	87.93%	87.96%
	2018	85.88%	85.15%	85.02%	85.50%
	2019	81.45%	79.42%	79.32%	80.01%

Source: Financial statements

Table 4.40 shows that the BOPO of banks before the merger varied from around 79.32% to 87.96% from 2017 to 2019, indicating fluctuations in these values prior to the merger. In 2017, the banks before the merger had a BOPO value of 87.99%, which was the highest, while the lowest BOPO value was 87.22%. Based on the calculations of BOPO, the banks prior to the merger were ranked fourth in 2017, which suggests a poor performance with an average BOPO value of 87.78%.

In 2018, the banks before the merger had a BOPO value of 85.88%, which was the highest among all banks. On the other hand, the lowest BOPO value was 85.02%. This suggests that the banks before the merger were in the satisfactory category or in the third position. In 2019, the banks prior to the merger achieved an impressive BOPO value range, with the highest value reaching 81.45% and the lowest value at 79.32%. This indicates their exceptional performance and places them at the top in terms of rating weight. Thus, prior to the merger, banks had an average BOPO value

of 84.40%, suggesting that they held a respectable position in rating the weight of BOPO.

d) Assessment of Earning of Banks Before Merger

Banks that were in operation before the merger were able to sustainably and profitably create profits throughout the observation period, according to the earnings evaluation that considers three variables: return on assets, net operating margin, and BOPO. Before the merger, the ROA value of the banks was 1.23%, which is considered satisfactory. The average NOM value of banks before the merger was 1.05%, which put them in the bad group. At the same time, BOPO's ratio was an impressive 87.78%. Profits generated by banks previous to the merger were average, according to all earnings characteristics, as shown by the ROA figure. Productive assets may be able to earn a lesser rate of profit, nonetheless, according to the NOM value of 1.05%. At the same time, the BOPO viewpoint indicates that the profitability rate of the banks before to the merger was rather low, at 87.78%. According to the values of ROA, NOM, and BOPO, banks were able to create a reasonable amount of profit prior to the merger.

In 2018, banks prior to the merger were able to generate a profit with a satisfactory level of profitability. Prior to the merger, the banks had an impressive ROA value of 1.32% in the good category. Before the merger, banks had an average NOM value of 1.18%, which classified them as poor. Meanwhile, the BOPO ratio stood at 85.39%. Thus, the ROA value indicates a significant profit for banks before the merger, whereas the NOM value of 1.18% suggests a less profitable outcome from productive assets. Meanwhile, looking at the perspective of BOPO, banks before the merger had a relatively low profitability rate, with a slightly higher BOPO ratio of 85.39%. Therefore, the banks prior to the merger were unable to generate satisfactory profits, as evidenced by the low values of ROA, NOM, and BOPO.

In 2019, banks before the merger could generate a profit with a good profitability value. Banks before the merger had an ROA value of 1.79% in the very good category. Prior to the merger, banks averaged a NOM value of 1.67%, placing them in the satisfactory category. In the meantime, the ratio of BOPO was 80.05%, demonstrating excellent performance. Therefore, based on all earnings variables, the banks' profit value prior to the merger was high, as indicated by the ROA value.

However, productive assets were responsible for generating this profit value, which averaged out to 1.67% based on the NOM value. Meanwhile, according to the BOPO perspective, banks before the merger had a high profitability rate with a ratio of BOPO was the very low rate of 80.05%. Hence, banks before the merger could generate profit in a good way, as seen from the value of ROA, NOM, and BOPO.

4.2.4.4. Capital

Table 4. 41: Assessment on Capital Adequacy Ratio of Banks Before the Merger for the Period of 2017 – 2019 (In Average Value)

Bank Before the Merger	Evaluation in	Q1	Q2	Q3	Q4
	2017	18.37%	18.47%	18.28%	18.54%
	2018	20.91%	21.04%	22.10%	22.06%
	2019	20.50%	19.85%	20.35%	20.46%

Source: Financial statements

The CAR of banks prior to the merger was in the very excellent category or in the first ranking, with a range of approximately 18% to 22% between 2017 and 2019. This information is revealed in Table 4.41. The highest CAR score was 18.54% for banks prior to the merger in 2017, while the lowest CAR value was 18.28%. Consequently, the banks that obtained the maximum rating weight in 2017 prior to the merger were classified as "very good" according to NPF's calculations. Subsequently, the highest CAR value of 22.10% was achieved by banks prior to the merger in 2018, while the lowest CAR value was 22.04%. This suggests that banks prior to the merger were either in the first or very excellent category. In 2019, the banks that existed prior to the merger obtained the highest NPF value of 20.50% and the lowest CAR score of 19.85%, which suggests that they were either in the very good category or ranked first in the rating weight.

4.2.4.5. Assessment on Soundness of Banks Before Merger

The bank was in a robust state during the period of 2017–2019, as indicated by the results of four factors of bank soundness: risk profile, GCG, earnings, and capital. The bank's overall risk profile did not indicate a marginally elevated default risk rate prior to the merger. In the interim, the Bank's conformance with the Central Bank of Indonesia's procedures was satisfactory prior to the merger, with the GCG value ranking second. The bank was able to generate a healthy profit prior to the merger, as evidenced by a high return on assets ratio, a fruitful asset that could generate

profit, and a BOPO ratio that was relatively low. Before the merger, the capital adequacy ratio of the bank was even considered to be very excellent. Banks that exist prior to a merger are considered financially robust and capable of coping with adverse effects resulting from changes in business conditions and external factors, according to the RGEC method. The evaluation rating considers a variety of factors, including profitability, capitalization, risk profile, and the implementation of GCG. In general, these factors are perceived as positive.

4.2.5. Soundness of Bank Syariah Indonesia

The assessment of soundness of Bank Syariah Indonesia as bank after the merger for the period of 2017 to 2019. This assessment uses RGEC method, therefore, this chapter has sub-chapter for 4 factors of assessment is as follow.

4.2.5.1. Risk Profile

a) *Non-Performing Financing*

Table 4. 42: Assessment on Non-Performing Financing of Bank Syariah Indonesia for the Period of 2020 - 2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	2.49%	2.57%	2.66%	2.51%
2021	3.09%	3.11%	3.05%	2.93%	
2022	2.91%	2.78%	2.67%	2.42%	

Source: Financial statements

According to Bank Syariah Indonesia's 2020 assessment of non-performing financing, its value was quite stable. In the first quarter of 2020, Bank Syariah Indonesia received an NPF value of 2.49%. Then, in the second and third quarters, they increased 3.21% compared to the first quarter and 3.50% compared to the second quarter. However, in the fourth quarter, there was a decline that amounted to 5.64%, or the NPF score of 2.51%. As a result, Bank Syariah Indonesia's overall non-performing financing value is good due to the lack of significant improvement through 2017. In 2017, Bank Syariah Indonesia's average non-performing financing was 2.56%, with good criteria.

In 2021, Bank Syariah Indonesia's non-performing financing value fluctuated throughout the year. In the first quarter, the value of NPF was 3.09%. In the second quarter, it gone up by 0.65% compared to the first quarter. The value of NPF increased to 3.05% in the third quarter, but declined by 3.93% in the fourth quarter,

resulting in a value of 2.93% for NPF. Thus, the overall value of NPF in 2021 averaged 3.05% with a good predicate.

In 2022, the value of NPF at Bank Syariah Indonesia decreased compared to 2021. In the first quarter of 2022, Bank Syariah Indonesia received an NPF of 2.78%. In the second quarter of 2022, there was a decrease of 4.47% compared to the first quarter, and this trend continued in the third quarter of 2022, with a decline of 3.96% compared to the second quarter, resulting in an NPF score of 2.67%. Then, the fourth quarter saw a decline continue, with a downturn of 9.36% compared to the third quarter.

b) Financing to Deposit Ratio

Table 4. 43: Assessment on Financing to Deposit Ratio of Bank Syariah Indonesia for the Period of 2020 - 2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	74.13%	74.16%	74.56%	73.98%
2021	77.28%	74.53%	74.45%	73.39%	
2022	74.37%	78.14%	81.45%	79.37%	

Source: Financial statements

Table 4.43 presents an evaluation of Bank Syariah Indonesia's financing-to-deposit ratio (FDR) from 2020 to 2022. During the 2020 period, Bank Syariah Indonesia successfully distributed third-party funds to its customers. For the first quarter of 2020, the value of FDR amounted to 74.13% with good criteria. Then, in the second quarter, there was a little bit of an improvement of 0.04%; it amounted to 74.16%. The improvement in FDR continued in the third quarter of 2020, reaching 74.56%. However, in the last quarter of 2020, Bank Syariah Indonesia received a value of FDR that was smaller than the third previous quarter, which amounted to 73.98%, and the value of FDR averagely during the period of 2020 was 74.21% with a very good predicate.

Table 4.43 presents the evaluation of the FDR of BSI in 2021, which was a little bit different from the conditions of the FDR in 2020, in which Bank Syariah Indonesia distributed the deposit funds more than in 2020. In the first quarter of 2021, Bank Syariah Indonesia had an FDR score of 77.28%; in the second quarter of 2021, it decreased to 3.56%, so the FDR score was 74.53%. As for the third, it had a score of 74.45%, and it decreased a little bit to 1.42% in the fourth quarter. The average FDR

score for Bank Syariah Indonesia was 74.91%, indicating it was either very good or in the top position.

The assessment of Bank Syariah Indonesia's financing-to-deposit ratio in 2022 revealed an improvement in the FDR value compared to both the values in 2020 and 2021. In the first quarter of 2022, Bank Syariah Indonesia's FDR received a score of 74.37%, with very good criteria. However, the FDR of Bank Syariah Indonesia experienced a significant improvement in the second quarter, rising to 5.07%, or the score of FDR was 78.14%. Then, in the third quarter, the FDR score still increased by 4.24%. In addition, the decline in the fourth quarter was not significant at 2.55%, with a score of 79.37%. The average FDR score for BSI during the period of 2022 was 78.33%, meeting good criteria.

c) Assessment of the Risk Profile of Bank Syariah Indonesia

Based on the assessment of the risk profile, which consists of two variables, namely NPF and FDR, it was found that Bank Syariah Indonesia was in the second position of the weight rating of the NPF and in the second position of the weight of the FDR during the period of observation. In 2020, Bank Syariah Indonesia had an NPF value of 2.56% with good criteria. Meanwhile, the FDR value was 74.21% with very good criteria. Furthermore, the NPF value shows that Bank Syariah Indonesia has the lowest payment default rate, ranking second in terms of NPF weight. On the other hand, Bank Syariah Indonesia had a good FDR with a value of 74.21%. The risk profile of the bank before the merger, therefore, was in a healthy or good position, with a very good financing-to-deposit ratio as well as a good NPF value.

In 2021, Bank Syariah Indonesia's risk profile was in a healthy or good position, characterized by a very good financing-to-deposit ratio and a good NPF value. Bank Syariah Indonesia had an NPF value of 3.05% with good criteria. Meanwhile, the FDR value was 74.91% with good criteria. Therefore, the NPF value, which ranked second in terms of weight, indicates that Bank Syariah Indonesia had a slightly lower payment default rate. Meanwhile, Bank Syariah Indonesia had a good FDR with a value of 76.09%.

And in 2022, the risk profile of Bank Syariah Indonesia was in a healthy or good position with a good financing-to-deposit ratio, while the NPF value was in a very good position. Bank Syariah Indonesia had an NPF value of 2.70% with good

criteria. Meanwhile, the FDR value was 78.33% with good criteria. Therefore, the NPF value reveals that Bank Syariah Indonesia has the lowest payment default rate, ranking second in terms of NPF weight. Meanwhile, Bank Syariah Indonesia had a good FDR, with a value of 78.33%.

4.2.5.2. Good Corporate Governance

Table 4. 44: Assessment on Good Corporate Governance of Bank Syariah Indonesia for the Period of 2017 - 2019

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	1.60	1.85	1.62	2.10
2021	1.93	2.18	2.28	2.42	
2022	1.78	1.61	1.94	1.82	

Source: Financial statements

Table 4.44 presents the evaluation of Bank Syariah Indonesia's good corporate governance from 2020 to 2022, indicating a satisfactory performance in this area. In the first quarter of 2020, Bank Syariah Indonesia achieved a good corporate governance score of 1.60%, indicating a strong foundation. Then, in the second quarter of 2020, Bank Syariah Indonesia's good corporate governance improved by 15.62%, or the score was 1.85%. However, the third quarter underwent a downturn of 12.43%. Then, in the fourth quarter of 2020, Bank Syariah Indonesia decreased again, reaching 29.62%, or a GCG score of 2.1. As for the score of the GCG through the period of 2020, BSI Syariah had a score of good corporate governance of 1.79, with a good predicate.

In the second year of observation, Bank Syariah Indonesia's good corporate governance decreased slightly on average compared to the period in 2020. In the first quarter of 2021, Bank Syariah Indonesia had not managed the GCG well, with a score of 1.93 compared with the first quarter of 2020. Then, the score increased, and the score of good corporate governance was 2.18 in the second quarter. In the third quarter of 2021, Bank Syariah Indonesia had a GCG of 2.28. And in the last quarter of 2021, Bank Syariah Indonesia's good corporate governance still underwent improvement, which amounted to 6.14% compared to the third quarter of 2021. Eventually, Bank Syariah Indonesia had a score of good corporate governance of 2.20 during the 2021 average, which was slightly higher than in 2020.

Based on Table 4.44, it appears that Bank Syariah Indonesia's good corporate governance in 2022 had a better performance than two years before. In the first quarter, Bank Syariah Indonesia had a score of good corporate governance of 1.78, which was a good predicate. Then, in the second quarter, the score of good corporate governance underwent a decline of 9.55% over the first quarter. In the third quarter, the score of good corporate governance increased to 20.49%, or the score was 1.94. And in the fourth quarter, Bank Syariah Indonesia's score of good corporate governance was 1.82, with a good predicate.

4.2.5.3. Earning

a) *Return on Asset*

Table 4. 45: Assessment on Return on Asset of Bank Syariah Indonesia for the Period of 2020-2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	1.74%	1.73%	1.68%	1.65%
2021	1.72%	1.70%	1.70%	1.61%	
2022	1.93%	2.03%	2.08%	1.98%	

Source: Financial statements

Table 4.45 presents the evaluation of Bank Syariah's Indonesia return on assets for the period 2020–2022, which meets the criteria of a very healthy bank according to BI circular letter no. 13/24/DPNP of 2011. In the first quarter of 2020, Bank Syariah Indonesia had a ROA score of 1.74%, meeting the criteria for being very healthy. However, the condition of Bank Syariah Indonesia's ROA decreased in the next quarter. In the second quarter, Bank Syariah Indonesia had a ROA score of 1.73%. Then, in the third quarter, Bank Syariah Indonesia's ROA incurred a downturn, with a score of 1.68%. In the last quarter of 2020, Bank Syariah Indonesia's ROA was 1.65%. In addition, Bank Syariah Indonesia's ROA in 2020 averaged 1.70%, indicating a very good financial position. This suggests that Bank Syariah Indonesia could generate profit by utilising its own assets in a strategic manner.

Based on table 4.45, Bank Syariah Indonesia's ROA score in 2021 was better than in 2020, in which Bank Syariah Indonesia received a good predicate. In the first quarter of 2021, Bank Syariah Indonesia had a ROA score of 1.72%, meeting the criteria for being very good. In the second and third quarters, Bank Syariah Indonesia received a score of 1.70%, or a decline of 1.16% from the first quarter of

2021. However, in the fourth quarter, the ROA decreased by 5.29%. As for the score of ROA average, Bank Syariah Indonesia's average score of ROA was 1.68% with a predicate of very good, which means that Bank Syariah Indonesia could generate profit by utilising its own assets in a propriate way.

In the last assessment for the ROA of BSI in 2022, BSI's ROA was much better than both the ROA conditions of 2020 and 2021, with a very good predicate. In the first quarter of 2020, BSI's ROA acquired a score of 1.93%. Then, in the second and third quarters, there was improvement; in the second quarter, Bank Syariah Indonesia's ROA score was 2.03%, and in the third quarter, it was 2.08%. In addition, the improvement continued in the last quarter; Bank Syariah Indonesia decreased by 4.81%, or a score of 1.98%. Bank Syariah Indonesia's ROA, therefore, reached the predicate of being very good, with a 2.01% average, which means that Bank Syariah Indonesia could generate profit by utilising its own assets very well.

b) Net Operating Margin

Table 4. 46: Assessment on Net Operating Margin of Bank Syariah Indonesia for the Period of 2020 - 2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	1.75%	1.84%	1.77%	1.76%
	2021	1.92%	1.86%	1.82%	1.75%
	2022	2.11%	2.22%	2.29%	2.17%

Source: Financial statements

Based on Table 4.46, Bank Syariah Indonesia attempted to do much better in net operating margin (NOM) through three years of observation. Throughout 2020, Bank Syariah Indonesia's net operating income was fairly stable. In the first quarter of 2020, Bank Syariah Indonesia recorded a good performance in the NOM, which amounted to 1.75%. Then, in the second quarter, the NOM score amounted to 1.84%. However, in the third quarter of 2020, Bank Syariah Indonesia underwent a downturn, with a NOM score of 1.77%. In the last quarter of 2020, Bank Syariah Indonesia still decreased by 0.56%. Bank Syariah Indonesia, therefore, had a NOM score of 1.78%, indicating a satisfactory average.

In 2021, Bank Syariah Indonesia's net operating margin was still in the predicament of being moderately healthy. In the first quarter of 2021, Bank Syariah Indonesia had a NOM score of 1.92%, indicating that it was moderately healthy. In the second

quarter, Bank Syariah Indonesia decreased by 3.12%, or the NOM score was 1.86%. Then, in the third quarter, Bank Syariah Indonesia still underwent a decline, with a score of 1.82%. However, in the last quarter of 2021, Bank Syariah Indonesia decreased by 3.84% over the third quarter of 2021.

In 2022, Bank Syariah Indonesia's net operating margin performed significantly better than in 2017 and 2018. In the first quarter of 2019, Bank Syariah Indonesia had a NOM score of 2.11%. Then, Bank Syariah Indonesia's NOM increased by 5.21%, or the NOM score was 2.22% in the second quarter of 2019. In addition, in the third quarter of 2019, Bank Syariah Indonesia increased again by 3.15%, or the NOM score of 2.29%. Then, Bank Syariah Indonesia underwent a decline in the last quarter of 2019 that amounted to 5.24%, or the NOM score of 2.17%. Bank Syariah Indonesia, therefore, had a NOM score of 2.20% average, indicating that it was healthy.

c) Operating Expenses to Operating Income

Table 4. 47: Assessment on Operating Expenses to Operating Income of Bank Syariah Indonesia for the Period of 2020 - 2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	82.87%	81.26%	81.95%	81.81%
2021	79.90%	79.92%	79.84%	80.46%	
2022	75.35%	74.50%	74.02%	75.88%	

Source: Financial statements

Table 4.47 illustrates the result of the assessment of BOPO of BSI for the period of 2020 to 2022, which refers to excellent performance in BOPO. In the first quarter of 2020, Bank Syariah Indonesia had a score of 82.87% on BOPO of 82.87% with very good criteria. Then, in the second quarter of 2020, BSI's BOPO were quite same namely a score of 81.26%. However, as for the third and fourth quarters, Bank Syariah Indonesia had a score of 81.95% in BOPO, and in the fourth quarter, it was 81.81%. In addition, Bank Syariah Indonesia had a high score of BOPO of 81.97%, with a predicted very good average through 2020.

In the second year of observation, Bank Syariah Indonesia's BOPO ratio decreased slightly on average. In the first quarter of 2021, Bank Syariah Indonesia had not managed the BOPO well, with a score of 79.90%. Then, the score underwent a downturn, and the ratio of BOPO was 79.92% in the second quarter. In the third

quarter of 2021, Bank Syariah Indonesia had a BOPO ratio of 79.84%. And in the last quarter of 2021, Bank Syariah Indonesia's BOPO underwent improvement, which amounted to 0.77% compared to the third quarter of 2021. Eventually, Bank Syariah Indonesia had a score of BOPO of 80.03% during the 2021 average, which was smaller than in 2020.

Based on Table 4.47, it appears that Bank Syariah Indonesia's BOPO in 2022 had better performance than two years before. In the first quarter, Bank Syariah Indonesia had a score of BOPO of 75.35%, which was very good. Then, in the second quarter, the ratio of BOPO underwent a decline of 1.13% over the first quarter. In the third quarter, the ratio of BOPO decreased. And in the fourth quarter, Bank Syariah Indonesia's score of BOPO was 75.88%, with the predicate of being very good.

d) Assessment of Earning of Banks after Merger

Based on the assessment of earning that comprises of three variables are ROA, NOM and BOPO, Bank Syariah Indonesia reached the good criteria during the period of observation which indicates that Bank Syariah Indonesia could generate profit in good way as well as in a sustainable way. In 2020, BSI had ROA value of 1.70% with the very good category. And BSI had NOM value of 1.78% with satisfactory category in average. Meanwhile, the value of BOPO was the low rate amounted to 81.97%. Therefore, all variables of earning indicate that Bank Syariah Indonesia had profit value was in the high rate according to ROA value, but profit value could be generated by productive asset was in the average rate seen from NOM value of 1.78%. Meanwhile, according to BOPO perspective, Bank Syariah Indonesia constitutes the very high profitability rate with ratio of BOPO was the very low rate of 81.97%. Hence, Bank Syariah Indonesia could generate the profit in good way seen from value of ROA, NOM, and BOPO.

Bank Syariah Indonesia could make a profit in 2021 with a pretty good profitability number. With a ROA of 1.68%, Bank Syariah Indonesia was in the very good group. And Bank Syariah Indonesia had a NOM score of 1.84%, which is in the average range. While this was going on, BOPO was worth 80.03%. So, all of the variables that show how much money Bank Syariah Indonesia made show that its profit value was high (ROA value), while the average rate of 1.84% for NOM value shows that

its profit value could be produced by productive assets. However, from the point of view of BOPO, Banks Syariah Indonesia has a very high rate of success, even though BOPO's rate was very low at 80.03%. Because of this, Banks Syariah Indonesia could make good money, as shown by the values of ROA, NOM, and BOPO.

With a good profitability figure, Bank Syariah Indonesia could make money in 2022. With a ROA of 2.01%, Bank Syariah Indonesia was in the very good group. Its NOM value was 2.20 percent, which is in the "good" group on average. At the same time, BOPO's value was 74.94%, which meets very good standards. So, all of these factors show that Bank Syariah Indonesia made a lot of money. The return on assets (ROA) value showed that this was the case, and the net operating margin (NOM) value of 2.20 percent showed that this was also the case. From the point of view of BOPO, on the other hand, Bank Syariah Indonesia has a very high rate of success, even though BOPO's rate was very low at 74.94%. So, based on the values of ROA, NOM, and BOPO, Bank Syariah Indonesia was able to make lots of money.

4.2.5.4. Capital

Table 4. 48: Assessment on Capital Adequacy Ratio of Bank Syariah Indonesia for the Period of 2020 - 2022

Bank Syariah Indonesia	Evaluation in	Q1	Q2	Q3	Q4
	2020	15.89%	15.45%	14.36%	15.16%
	2021	15.63%	15.75%	16.26%	16.66%
	2022	17.37%	16.15%	16.15%	16.86%

Source: Financial statements

Based on the results of the assessment of the CAR, it can be seen that BSI had a CAR value ranging from 15% to 17%, which was higher than 12% as a benchmark for the very healthy category during the period of 2020–2022. In 2020, for the first quarter, Bank Syariah Indonesia had a CAR value of 15.89%, which indicated that it was a very healthy predicate. As for the second quarter, the value of CAR decreased by 2.77%, or the value car was 15.45%. Then, the decline continued in the third quarter. Bank Syariah Indonesia had a score of CAR of 14.36%, or the value of CAR was amounted to 14.36%. And, in the last quarter of 2020, Bank Syariah Indonesia had a score of 15.16%, or an improvement was amounted to 5.57%. Hence, it was

concluded that Bank Syariah Indonesia, during the period 2020, reached a very healthy category with a value of 15.21%.

In 2021, BSI's capital adequacy ratio was still in the predicament of being in the very healthy category. In the first quarter of 2021, BSI had a CAR score of 15.63%, indicating that it was a very healthy category. In the second quarter, Bank Syariah Indonesia increased by 0.77%, or the CAR score was 15.75%. Then, in the third quarter, Bank Syariah Indonesia still improved, with a CAR score of 16.26%. In addition, in the last quarter of 2021, Bank Syariah Indonesia improved by 2.46% over the third quarter of 2021. Hence, Bank Syariah Indonesia's capital adequacy ratio was higher than average in 2021, with the CAR score of 16.07%.

Based on Table 4.48, it appears that Bank Syariah Indonesia's capital adequacy ratio in 2022 had better performance than two years before, with a higher CAR score. In the first quarter, Bank Syariah had a capital adequacy ratio score of 17.37%, which was a very healthy category. Then, in the second quarter and the third quarter, the score of CAR amounted to 16.15%, or a decrease of 7.02%. In the fourth quarter, the capital adequacy ratio underwent a slight improvement and amounted to 16.40%, with the predicate of being very healthy. Furthermore, the score of CAR in 2022 was 16.63% on average.

4.2.4.5. Assessment on Bank Syariah Indonesia Soundness

BSI is healthy for 2020–2022, based on risk profile, solid corporate governance, profits, and capital. BSI's risk profile showed a slightly elevated default risk rate in the low range, suggesting robust health. While Bank Syariah Indonesia's GCG value was second, its compliance with central bank regulations was good. Then Bank Syariah Indonesia might create good profit with a high return to asset ratio, a productive asset, and a low BOPO ratio. Moreover, Bank Syariah Indonesia maintained a high CAR. Bank Syariah Indonesia is strong and resilient, according to the RGEC approach, and can survive large business changes. Moreover, risk profile, GCG implementation, profitability, and capitalization indicate a good rating.

4.2.6. Comparison of the Soundness Between Banks Pre-and Post-Merger

Within this sub-chapter, this study examines the financial stability of banks prior to the merger involving BRI Syariah, BNI Syariah, and BMS, in comparison to the post-merger bank, BSI. Before the merger, Banks utilised data from NPF, FDR,

GCG, ROA, NOM, BOPO, and CAR from 2017 to 2019. Meanwhile, the bank continues to utilise the same data from the period of 2020 to 2022. Before proceeding with the comparison of the condition pre- and post-the merger, this study performs a normality test on four factors of bank soundness for both banks.

4.2.6.1. Normality Test for the Data of Bank Soundness

It is not possible to conduct the comparison without first doing a normalcy test. Sugiyono (2017) states that the goal of a normality test is to evaluate the distribution of data in a set of variables or data and to determine if the distribution is normally distributed or not. In addition, the work here is based on the premise that regularly distributed data are those for which the test value is bigger than 0.05. The data are deemed non-normally distributed, however, when the test value is less than 0.05. The paragraphs that follow lay out this theory.

H_0 = indicates that the residual data follows a normal distribution.

The null hypothesis is accepted when the results of the Kolmogorov-Smirnov Test provide an insignificant probability value that is more than 0.05. This indicates that the residual data follows a normal distribution.

H_a = indicates the data is left over does not follow a normal distribution.

A significant probability value of less than or equivalent to 0.05 returned by the Kolmogorov-Smirnov Test allows one to disprove the null hypothesis and infer that the residual data is not equivalent to a normal distribution.

In addition, the normality test that is utilised is the Kolmogorov-Smirnov test, and SPSS 27 is utilised to process the data.

One-Sample Kolmogorov-Smirnov Test

		Diff	
N		84	
Normal Parameters ^{a,b}	Mean	.5952	
	Std. Deviation	.85192	
Most Extreme Differences	Absolute	.329	
	Positive	.329	
	Negative	-.230	
Test Statistic		.329	
Asymp. Sig. (2-tailed) ^c		<.001	
Monte Carlo Sig. (2-tailed) ^d	Sig.	.000	
	99% Confidence Interval	Lower Bound	.000
		Upper Bound	.000

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525.

Figure 4. 5: Normality Test with Kolmogorov-Smirnov for Bank Soundness Pre-and Post-Merger

Source: SPSS 27

Based on the results of the Kolmogorov Smirnov test, the banks pre- and post-the merger have an asymptotic significance 2-tailed value of 0.001. Based on the test results, it is evident that the null hypothesis is denied as a test score is less than 0.05. This suggests that the data on banks' soundness before the merger does not follow a normal distribution. Furthermore, the data on bank soundness before and after the merger do not follow a normal distribution. As a result, a Wilcoxon signed rank test will be conducted in the next sub-chapter to compare the two sets of data.

4.2.6.2. Wilcoxon Signed Rank Test on Bank Soundness

The Kolmogorov-Smirnov normality test shows that bank soundness data before and after mergers is not regularly distributed. This study uses the Wilcoxon signed rank test to evaluate soundness before and after the merger. The comparative test determines if Sharia bank mergers changed conditions. The comparison test findings for this Wilcoxon signed rank test in SPSS 27 are as follows.

		Ranks		
		N	Mean Rank	Sum of Ranks
After - Before	Negative Ranks	1 ^a	13.50	13.50
	Positive Ranks	36 ^b	19.15	689.50
	Ties	47 ^c		
	Total	84		

a. After < Before

b. After > Before

c. After = Before

Figure 4. 6: Ranking of Soundness Comparison Test with Wilcoxon Signed Rank Test for the Banks Pre-and Post-Merger

Source: SPSS 27

For the values that were produced, such as the median rank, the aggregate of ranks from both the negative ranks and positive ranks group, and ties, the Wilcoxon Signed Rank Test was developed using the calculating approach. Furthermore, negative ranks indicate that the data or soundness value after the merger is lower than the efficiency value before the merger; that is, the analysis finds lower data for the soundness variables after the merger than for the variables before the merger.

And positive ranks describe the soundness value or data of after the merger is higher than the soundness value or data of before the merger, so in the finding of analysis finds out 36 data of soundness after the merger is higher than data of soundness before the merger.

Meanwhile, ties explain the similarity of data between the soundness value of after the merger and before the merger. Based on the result of analysis of Wilcoxon Signed Ranks Test there is 47 similarity data of soundness during this observation.

Test Statistics ^a	
After - Before	
Z	-5.331 ^b
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Figure 4. 7: Output of Soundness Comparison Test with Wilcoxon Signed Rank Test for the Banks Pre-and Post-Merger

Source: SPSS 27

According to the results of the Wilcoxon signed ranks statistical test, the z-score is -5.331 and the asymptotic significance level is 0.001. If the 2-tailed asymptotic significance is less than 0.05, which is the alpha value, then the null hypothesis (H_0) is rejected. So, the health of the banks was not the same before and after the merger. In addition, 47 results from 4 factors of bank soundness were found to be similar in the comparison test. The NPF, FDR, GCG, and CAR variables all show a lot of similarities. At the same time, 37 different values from 4 different variables related to bank soundness were found by the comparison test. Also, ROA, NOM, and BOPO are three variables where the differences are most pronounced.



CHAPTER V

CONCLUSION

5.1. Summary of the Study

Based on the problem statements, analysis results, and discussion that have been carried out, it can be concluded that the efficiency and soundness rate of banks pre- and post-merger are as follows:

The first chapter of the study provides an overview of the study's background. Islamic banks in Indonesia encounter challenges such as restricted capital, elevated fund expenses, and surplus liquidity. The potential for Islamic banking to make a significant contribution to the Indonesian economy is substantial. However, there are still obstacles in the form of existing opportunities and untapped funding that need to be addressed. In 2021, state-owned enterprises took the initiative to address the challenges faced by Islamic banks in Indonesia by undertaking merger and acquisition activities involving several of these banks. Based on research findings, it has been observed that mergers and acquisitions in the banking industry have a detrimental impact on the long-term performance of Islamic banks. Furthermore, the financial performance of the merged bank does not see any improvement as a result of the merger.

Meanwhile, the financial service authority report highlights the positive trend in Islamic bank development in Indonesia during 2022, despite the challenges posed by the COVID-19 era. This indicates that the merger has a positive impact on the quality of Islamic banks. Furthermore, there are conflicting evaluations of efficiency, as both studies compare efficiency before and during the Covid-19 pandemic. Thus, the disparity in the findings of the study conducted by (Safira, K. & Aliludin, Arson, 2021) and (Al'haq, 2022) regarding bank efficiency warrants a reevaluation of the efficiency of Islamic banks between 2017 and 2022.

The second chapter of this study delves into the literature review and theoretical framework. Upon reviewing the literature, this study identifies three notable gaps in the thesis of the study's findings regarding the negative impact of bank mergers on financial performance. In addition, there is a discrepancy in the study's findings when comparing the financial productivity of Islamic banks in Indonesia prior to the

merger and throughout the COVID-19 pandemic. Insufficient assessment of the soundness by comparing the condition before and after the merger. However, this study focuses on developing the theory surrounding bank merger and acquisition, as well as examining the efficiency and bank soundness following these transactions.

This study concludes that efficiency is a crucial factor in the success of mergers and acquisitions. It emphasises the importance of businesses being able to generate outcomes that are more valuable than the resources they invest. Meanwhile, the efficiency bank refers to how banks handle their operations in terms of cost, revenue, and profit. Furthermore, this study employs DEA to assess the efficiency of banks. The input variables considered are capital, assets, third-party funds, and operating costs. On the other hand, the output variables taken into account are financing, operating income, and earnings.

According to this study, a bank's ability to carry out regular banking activities, adhere to banking regulations, and sustain its operations relies on several factors. These include capital, asset condition, quality of management, profitability, availability of fund, and solvency, all of which contribute to a healthy bank. This study utilises the RGEC approach to assess the bank's soundness condition, taking into account factors such as risk profile, GCG, earnings, and capital.

The third chapter of this study investigates into the topic of research methodology. This research utilises a quantitative methodology to achieve the research objectives. This study gathers data from the quarterly financial report of the OJK and four Islamic banks: BRI syariah, BNI syariah, BMS, and BSI. The data collected spans the period from 2017 to 2022. Then, the analysis data includes data envelopment analysis for efficiency, using DEAP xp and RGEC for assessing the bank's soundness.

In addition, this study examines the efficiency and soundness condition of banks before and after a merger. The data is analysed using a normality test with SPSS 27. Then, this study examines the banks' efficiency and soundness condition pre- and post-the merger using the Wilcoxon signed rank test in SPSS 27.

The analysis and explanations of the results are covered **in the fourth chapter** of this study. According to the findings of this study, the efficiency of banks before to the merger, specifically BRI Syariah, BNI Syariah, and Bank Mandiri Syariah, had

an average efficiency value of 0.996 during the period of 2017–2019. During the period of 2017–2019, it is evident that there was inefficiency. Furthermore, the inefficiency of the banks prior to the merger was discovered in the second quarter of 2017, as well as in the third quarter of 2019, and it was observed in all three of these quarters. As a result, prior to the merger, banks were banks that effectively controlled a limited number of inputs in order to create more outputs. This is evidenced by the fact that operating income increased between 2017 and 2019.

The efficiency of Bank Syariah Indonesia was observed to have an average efficiency rating of 0.997 for the period of time spanning from 2020 to 2022. Regarding the inefficiency that was encountered during the third quarter of 2020, with an efficiency value of 0.99, and during the fourth quarter of 2021, with an efficiency value of 0.98, the inefficiency was experienced. Furthermore, Bank Syariah Indonesia was not entirely efficient since it was unable to increase revenue efficiency without simultaneously increasing operating costs.

Findings from a comparison of Islamic banks' efficiency levels before and after the merger indicated that the newly created bank was more efficient. On top of that, the banks were inefficient three times before the merger, but just twice afterward. It appears that the merger policy is in favour of three Islamic banks merging into one, which is an optimal situation from an efficiency standpoint.

Based on the study's findings, "soundness" is used to describe a bank's ability to carry out regular banking activities and adhere to banking regulations. This is applicable both prior to and after the merger. Before and after the merger, banks are deemed to be in good health based on the RGEC method. These banks are known for their ability to weather unexpected shifts regarding economic conditions. Furthermore, the rating of assessment factors takes into account different outside variables such as risk profile, implementation of GCG, profitability, and market capitalization, all of which are generally advantageous.

In the meantime, the research came to the conclusion that there is a discernible change in the health condition of banks before and after the merger. In addition, both before and after the merger, the risk profile rate of the banks was low, and they managed to successfully implement the processes that were established by the Indonesian central bank. In the meantime, there were quite a few variances in

earning factor. Banks that existed prior to the merger had a profitability rate that was relatively high, whereas banks that existed after the merger had a profitability rate that was high. Additionally, the capital adequacy ratios of both banks before and after the merger were comparable, with the ratios' values being quite high.

5.2. Recommendation for Future Studies

This study has not covered the comparison between a successful merged bank with this Bank Syariah Indonesia to emphasis that BSI is fully successful. In addition, the analysis towards BSI is also necessary to be analyzed from compliance to Sharia. Hence, this research can also be carried out using other relevant approaches and methods that can explain successful of the merger and acquisition of three Islamic banks.



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