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HOW IS THE ROLE OF BPRS INTERMEDIATION IN INDONESIA? ANALYSIS OF INTERNAL AND EXTERNAL FACTORS TOWARDS FINANCING

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ABSTRACT
This study aims to analyze the relationship between the efficiency of Sharia Rural Banks (BPRS) and financing for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. The research covers 165 BPRS across 34 provinces during the 2017–2022 period, using panel data sourced from BI, OJK, and BPS. The findings indicate that BPRS efficiency significantly affects MSME financing. These results highlight the need for both policymakers and BPRS management to consistently improve efficiency in order to expand financing capacity. Moreover, the role of the OJK in overseeing and supporting BPRS is considered crucial to ensure better intermediation performance in serving MSMEs.

Keywords: MSMEs, BPRS, BPRS Efficiency

INTRODUCTION

Sharia Rural Banks (BPRS) are financial institutions that operate under Islamic principles and are regulated by Bank Indonesia. Their main function is that of a financial intermediary: they gather money from the community (in the form of deposits, savings, and other instruments) and then disburse them as financing.One of the most crucial roles of BPRS is to support Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. BPRS were specifically established to serve and provide financing access to MSMEs, a sector that often faces challenges in obtaining services from conventional banks. As an intermediary institution, BPRS holds a very strategic position in the national economy. By channeling funds to the MSME sector, BPRS not only helps small businesses grow but also creates a significant economic impact. This contribution makes BPRS a key player in driving economic growth in Indonesia.

MSMEs make significant contributions to national economies by enhancing overall production, generating employment opportunities, and helping to alleviate poverty and unemployment at the national level. Moreover, they serve as a vital driver of economic development in many countries, particularly through their role in job creation and the introduction of innovative ideas, contribution to Gross Domestic Product and welfare (Kwarteng Forkuoh et al. 2015). However, the ability of MSMEs to implement growth and development programs is highly dependent on access to internal finance and other factors. The main problem faced by the MSME sector is capital, where obtaining capital from financial institutions is not so easy. There are several things that must be considered by MSMEs, it cannot be denied that high loan interest rates, inflation and other macro indicators are considered by MSME actors to obtain capital from Islamic financial institutions.

If we look at the diagram above, where data on MSME credit balances in recent years from the Central Statistics Agency (BPS) recorded that MSME loan balances continued to grow and reached the highest level of RP 1,111.34 trillion in 2019. This is in line with growth Indonesia's economy has always been above 5%. However, MSME loan growth in 2014-2015 decreased by 8.01% where previously credit growth was at 15% growth. The decline in credit growth in 2015, Indonesian banks had to survive in the midst of a weakening global situation. In the face of uncertain global economic conditions, the plan to increase interest rates by the Fed, the rupiah exchange rate depreciated in August

2015, the JCI experienced a decline, as well as natural phenomena that indirectly affected all aspects of economic activity, including banking.

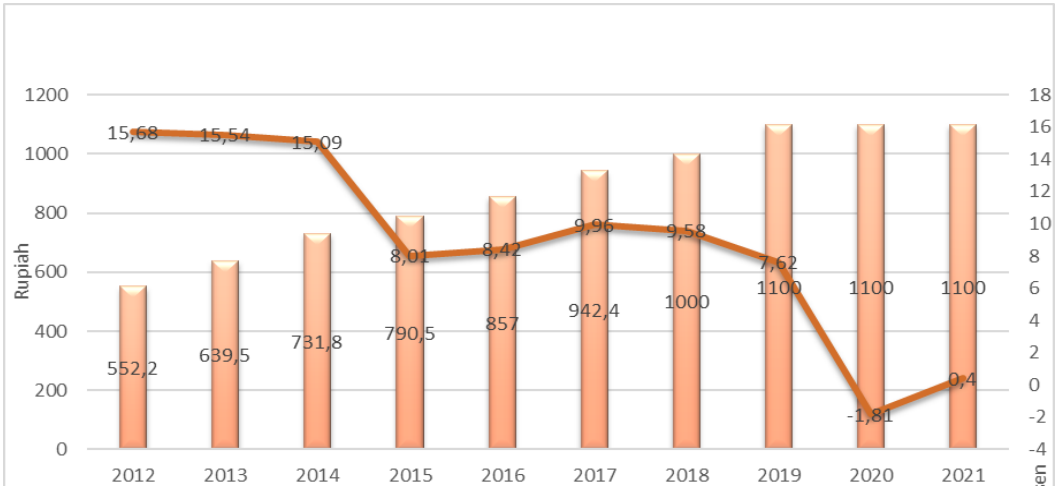

Diagram 1. MSME Loan Balance and Growth in Indonesia
Source: Bank Indonesia (2022)

Based on the diagram above, data on MSME credit balances in recent years from the Central Statistics Agency (BPS) noted that MSME loan balances continued to grow and reached the highest level of RP 1,111.34 trillion in 2019. This is in line with Indonesia's continuous economic growth. is above 5%. However, the case of the Covid-19 pandemic hit all economic sectors which caused the wheels of the economy to be unstable, when viewed from the data on MSME credit growth in 2020, credit growth fell to 1.18% compared to the previous year, which was 7.62%. The domestic economy also contracted at -2.07% in 2020. After a period of contraction, the government issued various policies and strategies to restore the Indonesian economy. so that in 2021 and 2022 economic growth continues to increase, namely growing at 3.69% and in 2022, at 5%. Meanwhile, MSME loans continued to recover until May 2021. The figure grew 0.4% on an annual basis with a total credit balance of IDR 1,095 trillion. Of that amount, 44.98% was disbursed for medium-sized business loans. A total of 34.8% for small business loans. Meanwhile, the remaining 20.21% is for micro credit (Budy 2021).

The Covid-19 Pandemic period not only hit large companies, but also had an impact on the small sector, which then had an impact on the current number of MSMEs being reduced, because the government had to issue policies to reduce the chain of transmission of the COVID-19 disease, from lockdown to PPKM. Enforcement of Restrictions on Community Activities). The strong impact of the policy, affecting employment, cash flow, production, sales, and other relationships of MSMEs, and exacerbating the complexity and urgency of financing. In the data on economic growth in 2022, which grew at 5%, cannot be separated from the contribution of MSMEs which are still surviving in the midst of the crisis due to the pandemic, so MSMEs are one of the pillars of the Indonesian economy.

From the data presented in the table 1, it is evident that the average financing to MSMEs provided by Islamic Rural Banks (BPRS) was the highest and consistently concentrated in West Java Province. Prior to the pandemic, beginning in 2019, the financing reached Rp. 1,448,606 billion and increased significantly to Rp. 2,024,989 billion in 2020. However, in 2021, the financing declined to Rp. 1,738,126 billion, before recovering with an upward trend again in 2022. East Java ranked second, with Rp. 789,280 billion in financing, which continued to grow until 2022, reaching Rp. 1,093,856 billion. Following

these two provinces were Central Java, Banten, Bangka Belitung, Yogyakarta (DIY), and Nanggroe Aceh Darussalam.

Table 1. Comparison of the Amount of Sharia BPRS UMKM Financing Provinces in Indonesia

Province	Average MSME Financing (Rp. Billion)			
	2019	2020	2021	2022
West Java	1.448.606	2.024.989	1 738 126	2.004.531
East Java	789.280	1.034.695	1 070 067	1.093.856
Central Java	783.238	911.821	1 139 072	1.336.623
Banten	405.818	508.561	431 521	378.459
Bangka Belitung	289.050	300.358	202 031	191.537
DIY	245.166	306.028	377 050	431.551
Nanggroe Aceh Darussalam	128.902	145.247	199 522	325.801

Source: Processed Data (2023)

The data further suggest that during the pandemic, particularly in 2021, the average financing distributed to MSMEs experienced a decline, reflecting the impact of Covid-19 on the capacity of BPRS to channel funds. This indicates that the pandemic led to a contraction in MSME financing, which consequently affected the overall disbursement levels of BPRS. Ideally, the distribution of financing is expected to enhance MSME productivity, thereby contributing to GDP growth supported by the real sector. Nevertheless, the Covid-19 pandemic substantially reduced SME profitability, diminished retained earnings, and limited the availability of internal funding sources (Jia et al., 2022). The Pandemic period will affect all financial aspects, starting from the decline in funds raised by financial institutions based on research results that TPF in Islamic banks both at BNI Syariah and BSM experienced a decline in Investment Funds during the Covid-19 pandemic (Hasan, Mansyur, and Mustamin 2021). This is based on the results of research conducted by Ihsan Effendi and Prawidya Hariani who said that ROA experienced a significant decline due to the pandemic, while NPF and FDR were still within limits. safe (Effendi and Hariani 2020). Changes in the internal finances of a financial institution will have an impact on MSME financing that will be channeled by a financial institution. In addition to internal, there are other variables in the form of macroeconomics which are external factors for Islamic Rural Banks, namely the Industrial Production Index (IPI) as a proxy for economic growth, inflation and interest rates.

Financing has an important role for the community and financial institutions. Micro, small and medium enterprises have the potential to be the backbone of the economy in many regions and contribute to employment compared to large companies (Chin et al. 2012). This study aims to explain the factors that influence the financing of Micro, Small and Medium Enterprises (MSMEs) in Indonesia, especially in Islamic Rural Banks in Indonesia. From the explanation above, it is known that MSMEs contribute to economic development. However, MSME financing in Indonesia itself can be influenced by financial factors from internal banking and other external factors.

LITERATUR REVIEW

Sharia Rural Banks (BPRS)

Sharia Rural Banks (BPRS) are Islamic financial institutions that serve as intermediaries between those who have surplus funds and those who need financing. They collect money from the public through various means, such as savings and deposits, and then channel it back out as financing for productive purposes. According to Taswan (2010), the ultimate goal of BPRS is to improve people's welfare. Their operations are strictly supervised by the Financial Services Authority (OJK). Unlike commercial banks, BPRS

have a more specific and limited scope. They are prohibited from handling payment traffic, accepting checking accounts, engaging in foreign exchange activities, or offering insurance. These limitations ensure that BPRS remain focused on their core mission of serving specific market segments, especially in rural areas and for micro-enterprises.

Micro, Small and Medium Enterprises Financing (MSMEs)

Micro, Small, and Medium Enterprises (MSMEs) are considered the foundation of the national economy. Their role is crucial in national economic development due to their ability to create jobs, provide broad economic services to the community, and promote income equity. Amalia (2016) also emphasizes that MSMEs contribute to both economic growth and national stability. Consequently, MSME financing is a vital process that provides these businesses with the funds they need to grow. This financial support ensures that MSMEs receive the protection, backing, and opportunities necessary to expand, allowing them to fulfill their role as a primary pillar of the nation's economy.

Bank Performance Efficiency with Data Envelopment Analysis (DEA)

In economic theory, efficiency is a core concept tied to the production process—that is, transforming inputs into outputs. The goal is to use production factors as efficiently as possible to optimize profits. When measuring the efficiency of financial institutions, the focus is on how they can achieve an optimal level of output with existing inputs, or how they can achieve a specific output level using a minimal amount of input. This study uses the Data Envelopment Analysis (DEA) method to measure efficiency. DEA is an evaluation tool designed to assess the economic performance of a group of entities (referred to as Decision Making Units/DMUs) that manage the same types of resources (inputs) to produce similar types of outputs. Within this research, bank efficiency is a key variable. An efficient bank is one that can more effectively manage its expenditures on deposit accounts, labor costs, and capital assets to generate profit. This efficiency also gives the bank greater opportunities to expand its lending portfolio.Previous research supports the importance of this efficiency. For example, Diallo (2018) found that bank efficiency can loosen credit constraints and boost the growth of industries that heavily rely on external financing, especially during financial crises. Furthermore, Anwar et al. (2020) showed that the technical efficiency of BPRs in West Java, Indonesia, has a significant positive impact on their provision of loans to MSMEs.

Third Party Funds

Third-Party Funds (TPF), which include deposits, savings, and demand deposits, have been widely recognized as the main source of capital for Islamic banks in carrying out their intermediation function. According to Aziz (2017), Saputri (2018), and Astarini, Hartoyo, & Maulana (2016), the volume of TPF significantly influences financing growth, as higher deposits enable banks to extend greater amounts of credit to the community. This aligns with the fundamental banking principle that mobilization of public funds directly determines financing capacity. However, not all empirical findings converge on this positive relationship. Ahmad Syarif (2016) highlighted that shocks or declines in TPF exert a negative impact on financing to MSMEs, indicating the sector’s sensitivity to fluctuations in deposit stability. Such findings suggest that the availability of financing is highly contingent upon the consistency of deposit inflows, and any instability could limit the role of Islamic banks in supporting MSME growth.Taken together, the literature emphasizes that TPF not only strengthens bank liquidity but also directly contributes to the sustainability of MSME financing. This underscores the importance of maintaining depositor confidence and implementing effective risk management strategies. The stabilization of TPF is thus central to enhancing the intermediary role of Islamic banks and ensuring the resilience of MSME financing in the broader economic system.

Fanancing Deposit Ratio

The Financing to Deposit Ratio (FDR) is a crucial metric that measures how much of a bank's third-party funds (deposits from the public) have been disbursed as financing. It is used to gauge a bank's liquidity and its ability to meet short-term obligations or quickly

distribute financing. A higher FDR indicates a higher level of liquidity, suggesting the bank is effectively channeling collected funds into credit. This ratio also indicates the extent to which a bank has maximized its lending based on the funds it has collected. When a bank's third-party funds are high, it can immediately channel more credit to the public. Research confirms this relationship: a higher FDR in Islamic banking signifies an increased ability to channel financing, particularly to the MSME sector (Saputri 2018). Furthermore, Astarini et al. (2016) found that FDR has a significant positive effect on financing, reinforcing its role as a key driver of lending growth.

Non Performing Financing (NPF)

Non-Performing Financing (NPF) is a ratio that measures the proportion of a bank's total financing that has gone bad, meaning customers have failed to make payments. Bank Indonesia (Indonesia's central bank) classifies these problematic loans into specific categories, such as "substandard," "doubtful," and "loss" financing. For this reason, banks must actively manage their NPF to remain below a mandated maximum of 5%. A high NPF signals that a bank is facing difficulties and has a high risk of "bad loans," which directly harms its financial health. This argument is supported by research from Syarif (2016), who states that Islamic banks must lower their NPF ratio to increase financing for the MSME sector. Other studies echo this, with Saputri (2018) finding a significant negative relationship where higher NPF leads to less financing. However, the connection is not always straightforward, as another study by Aziz (2017) found a significant positive relationship, suggesting the link between NPF and financing can be complex.

Capital Adequacy Ratio (CAR)

The **Capital Adequacy Ratio (CAR)** is a metric that assesses a bank's capital strength to withstand potential losses. It is an important tool for determining if a bank has sufficient capital to support business development and absorb operational risks. A higher CAR indicates that a bank has a stronger financial resilience to bear risks from its productive assets. A robust CAR also contributes significantly to a bank's profitability (Wardani 2020), as a well-capitalized bank is better positioned to make strategic business and expansion decisions.

Inflation

A rise in inflation generally has a negative effect on the economy. As the prices of goods and services increase, people with excess funds are more likely to spend them on these goods and services. For banks, this can reduce the amount of financing available. Specifically, higher inflation rates are linked to a decrease in the distribution of MSME financing. This is supported by several studies. For example, research by Risal Rinofah (2017) found that inflation is a macroeconomic variable that significantly affects lending levels in the Special Region of Yogyakarta. Similarly, other studies show that inflation has a significant negative impact on financing for both MSMEs and non-MSMEs (Astarini et al. 2016), and that this effect can be particularly pronounced on the MSME sector at Islamic Commercial Banks in the long term (Lestari 2020).

Interest Rate

An interest rate is the cost a borrower pays for a loan, and it serves as the return for the lender's investment. For small and medium-sized enterprises (SMEs), the cost of credit and access to financing are significant barriers, often more so than for larger companies, as highlighted by a study from Syarif (2016). Research also shows a clear link between benchmark interest rates and financing for SMEs. For example, a study by Hermawan and Herdina (2019) found a direct causal relationship: changes in the BI Certificate Rate affect the amount of outstanding financing for SMEs in sharia banking. This evidence suggests that overall changes in interest rates have a negative impact on the growth of financing within the banking sector.

Test of Individual Significance (partial t-test)

The partial t-test is conducted to evaluate the extent to which each independent variable individually helps clarify the dependent variable. The decision rule is straightforward: if the calculated t-value (t-count) is smaller than the critical value from the t-distribution (t-table), then the null hypothesis is accepted, implying that the independent variable does not significantly affect the dependent variable. Conversely, if the calculated t-value exceeds the t-table value, the null hypothesis is rejected, which indicates that the independent variable has a statistically significant influence on the dependent variable.
In this study, the efficiency variable was tested using a random effects regression at a 5% significance level (α=0.05). The results showed a tcount of -0.95, which is smaller than the ttable of 1.962. Because the calculated value is not greater than the critical value, the null hypothesis (that there is no significant effect) cannot be rejected. Therefore, the analysis concludes that, when considered on its own, BPRS efficiency does not have a statistically significant partial effect on MSME financing (ESM_F).

The implication of this result is that efficiency, as an individual predictor, does not contribute meaningfully to explaining variations in ESM_F. This finding suggests that while efficiency may still play a role in the model collectively when assessed alongside other independent variables, its isolated effect does not meet the criteria for statistical significance. Therefore, from a partial perspective, efficiency cannot be regarded as a key determinant of ESM_F within the context of this regression analysis.

The regression output reveals that the F-statistic is associated with a probability value of 0.0000. When evaluated against the conventional significance threshold of 0.05, this probability value is substantially lower, indicating that the null hypothesis of no joint effect must be rejected. In other words, the regression model as a whole demonstrates statistical significance. This finding suggests that the independent variables, when considered simultaneously, provide meaningful explanatory power in relation to the dependent variable (MSE_F). The result also strengthens the validity of the model by confirming that variations in MSE_F cannot be explained by random chance alone but are significantly influenced by the set of independent variables included in the analysis. Accordingly, it can be concluded that the collective contribution of the independent variables is crucial in explaining the behavior of MSE_F, thereby affirming the robustness of the empirical model employed in this study.

Coefficient of Determination (R-square)
The findings of the fixed effect regression reveal that the model yielded an Adjusted R-Square value of 0.6926. This indicates that approximately 69% of the variation in the dependent variable, efficiency, is explained by the independent variables incorporated into the model. Such a proportion reflects a relatively strong explanatory capacity, as more than two-thirds of the changes in efficiency can be attributed to the predictors under consideration. Conversely, the remaining 31% of the variation is influenced by factors or variables that lie outside the scope of the present model. These results suggest that, while the included independent variables significantly account for efficiency dynamics, external determinants not captured in the analysis also exert a substantial influence, thereby pointing to the complexity of efficiency as a multifactorial construct.
Table 2 shows a regression model that reveals the relationship between BPRS efficiency and BPRS financing to MSMEs in Indonesia during the 2019-2022 period. Based on the results of the study, it was found that the efficiency variable of BPRS has a positive value in providing BPRS financing to MSMEs in Indonesia. This means that it is important for BPRS in preserving and enhancing its effectiveness due to the connection that has proven to be significant between the two.

Table 2 Regression Model of the Relationship Between BPRS Efficiency and BPRS Financing to MSMEs in Indonesia for the 2019-2022 Period

Variable	(1) PLS	(2) RE	(3) FE
Efisiensi	0.165	0.005	0.000

Assets	0.000	0.000	0.000
DPK	0.710	0.959	0.961
FDR	0.989	0.001	0.051
NPF	0.881	0.012	0.008
ROA	0.872	0.169	0.073
CAR	0.659	0.002	0.239
Inflation	0.190	0.320	0.310
Interest	0.357	0.037	0.005
Economic Growth	0.875	0.028	0.191
Constant	0.970	0.000	0.000
F/χ2 statistics	195.77	30.12	29.81
Prob(F/χ2)	0.0000	0.0000	0.0000
Observasi	880	880	880
R2	0.6926	0.8848	0.8654

Source: Data observed (2023)

The results of the study that prove a significant relationship between the efficiency of BPRS and the financing of BPRS MSMEs are new findings and are considered the main contribution in this study. Several studies have also found similar findings to this study, about the relationship between the efficiency of Islamic banking and rural banks. This shows the importance of bprs pda efficiency in improving their quality and services in providing financing for MSMEs in Indonesia. The findings in this study where BPRS provides financing to MSMEs also remind us how important it is to optimize BPRS in setting minimal inputs so as to produce maximum output.

This research also provides a theoretical contribution to the concept of efficiency as discussed by Rahman and Firmansyah (2015), which emphasizes that industries must achieve technical efficiency in their operations in order to reach overall economic effectiveness. The results of this research support that viewpoint by showing that an increased level of efficiency within an organization in this instance, BPRS corresponds to an increased capacity of BPRS to extend financing to MSMEs. Furthermore, the rise in BPRS financing to MSMEs implies that BPRS institutions will be in a stronger position to obtain greater profits, since higher operational efficiency directly enhances their ability to channel more funds effectively. Variable control in the study, some are of significant value and some are insignificant. Variable assets are significant in predicting the provision of financing to MSMEs in Indonesia. This means that the higher the assets owned by BPRS, the higher the potential of BPRS in providing financing to BPRS. These findings are in line with research conducted by Rahman & Firmansyah (2015).

The Impact of NPF and CAR on MSME Financing Non-Performing Financing (NPF) has a significant impact on a bank's ability to provide financing to MSMEs. A higher NPF indicates a larger number of problematic loans, which reduces a bank's capacity to lend. When a BPRS has a high NPF, it must set aside more funds as reserves to cover potential losses, which limits the amount of capital available for new loans. Conversely, a low NPF allows a bank to disburse more financing.Based on data from the OJK, the average NPF for BPRS in Indonesia from 2019 to 2022 was 6.75%, which is above the 5% regulatory threshold. This highlights the critical need for BPRS to resolve problematic financing and adopt a more selective approach when providing loans to MSMEs. This finding aligns with research by Almunawwaroh & Marliana (2018).

The Capital Adequacy Ratio (CAR) is also a significant predictor of BPRS's ability to finance MSMEs. A higher CAR indicates that a bank has a stronger capital base relative to its risk-weighted assets. A high CAR is generally a good sign of financial stability and the ability to absorb potential losses. However, the text suggests that when financing is already a high proportion of a BPRS's total equity, it might limit the institution's ability to provide new loans. The average CAR for BPRS in Indonesia during 2019–2022 was 24.19%, well above the minimum requirement of 12%. This finding is consistent with

research conducted by Syakhrun et al. (2019).The inflation variable has proven to have no effect on MSME financing. However, the variable interest rate is significant in bprs financing to MSMEs in Indonesia. This means that when the interest rate is low, BPRS is increasingly intense in offering various financing products to MSMEs. However, financing in rural banks or zero-interest Islamic banks remains competitive with conventional interest rates. Variable economic growth is also of significant value. This means that the provision of BPRS financing to MSMEs is increasing when the economy is in good condition.

DATA AND METHODOLOGY

Data

This study used secondary data sourced from reports by the Financial Services Authority (OJK), Bank Indonesia (BI), and Statistics Indonesia (BPS). The data was collected using a purposive sampling method based on specific criteria: all Sharia Rural Banks (BPRS) in Indonesia from April 2019 to April 2022.The research included 165 rural banks located in 34 provinces across Indonesia, all of which are under the supervision of the OJK. For data analysis, the study employed Stata/SE 14.0 as its analytical tool. To fulfill its research objectives, this study calculates the efficiency of Sharia Rural Banks (BPRS) using the Data Envelopment Analysis (DEA) method. In general, there are two primary methods for estimating technical efficiency: parametric and non-parametric. DEA is a popular non-parametric method due to several key advantages.DEA is a deterministic method that uses linear mathematical programming, meaning it doesn't require the data to follow a specific statistical distribution. According to Zhu (2009), this makes it suitable for both large and small datasets and flexible enough to handle various types of inputs and outputs. Essentially, DEA is a linear programming-based technique that measures the efficiency of organizational units, known as Decision Making Units (DMUs) (Kao 2017).

Developed by Charnes, Cooper, and Rhodes in 1978 from Farrell's earlier work in 1957, the CCR model of DEA calculates an efficiency score based on the ratio of outputs to inputs, each with a specific weighting. The optimal weights are determined using a linear program, which is a mathematical model with two components: an objective function and constraints (Cooper, Seiford, and Zhu 2018). The objective function consists of decision variables that help maximize the efficiency ratio.

The provided equation represents an efficiency ratio that is being maximized. It shows a simplified model with a single input and a single output variable. The maximization of this ratio is subject to specific constraints. The goal is to find the optimal balance between inputs and outputs to achieve the highest possible efficiency score. The first inequality ensures that the efficiency ratio does not exceed 1, while the second condition requires that all assigned weights remain non-negative. Consequently, the efficiency ratio will always lie between 0 and 1. A BPRS is considered efficient if its ratio value is close to 1, or 100 percent, whereas a value approaching 0 reflects a lower degree of efficiency. The initial stage of this study consists of collecting the necessary dataset. This process begins with the identification of the Decision Making Units (DMUs), namely the entities for which efficiency levels are to be assessed. In this research, all Sharia Rural Banks (BPRS) operating in Indonesia are designated as the DMUs. The second stage involves determining the relevant input and output variables. Drawing on previous studies, this research classifies assets, income, and financing as outputs, while deposits and expenses are designated as inputs. This categorization facilitates the measurement of efficiency and helps to identify which variables contribute most significantly to the efficiency levels of BPRS.

To evaluate efficiency, this study employs the Data Envelopment Analysis (DEA) approach, specifically the CCR Primal model developed by Charnes, Cooper, and Rhodes. The CCR model is widely recognized as the foundational framework for

measuring relative efficiency among DMUs. Within this model, a DMU is deemed efficient when its score equals 1, while a score of less than 1 indicates inefficiency. Formally, the CCR model assumes the existence of nnn DMUs, each of which utilizes mmm input variables to generate sss output variables (Talluri, 2000).

Methodology

This research is a quantitative study that utilizes panel data analysis on all Sharia Rural Banks (BPRS) in Indonesia from 2017 to 2022. Panel data, which combines both time-series and cross-sectional data, offers significant advantages over traditional time-series data alone. According to DANADOR N. Gujarati (2010), the use of panel data provides a larger dataset, which results in more complete and detailed information. This leads to a greater degree of freedom (df) and, consequently, a better and more reliable estimation of the model. Additionally, Greene (2008) notes that panel data gives researchers greater flexibility in modeling the differences in behavior among individual entities. Finally, Baltagi (2008) highlights that panel data provides a richer source of variation, which enables a more efficient estimation of parameters.

Regression Model

This study aims to estimate the effect of BPRS efficiency on MSME financing in Indonesia. To do this, it uses a quantitative model where MSME financing is the dependent variable and efficiency is the primary independent variable. The model also includes several control variables to account for other factors that might influence the relationship. This approach is adopted from the methodology used in a study by Anwar et al. (2020).. The regression model is as follows (Eq i)

$$SME - F_{it} = b_0 + b_1 Eff_{it} + b_2 Dep_{it} + b_3 CAR_{it} + b_4 NPF_{it} + b_5 ROA_{it} + b_6 INF_{it} \quad \text{(i)}$$

RESULT AND DISCUSSION

Descriptive Statistics

Table 3 shows the annual performance of BPRS in Indonesia during the 2017-2022 period. Where financing to MSMEs increased during 2017 to 2022 with an average of IDR 11.3 billion during the period. Meanwhile, the efficiency of BPRS has fluctuated during the time span from 2017 to 2022, which averaged 1,000. There was a relatively high increase in assets and dpk BPRS with an average asset of 15.7 billion and dpk of 10.4 billion. NPF, Capital Adequacy Ratio (CAR). The average efficiency value is 1, this shows that the efficiency of BPRS has been achieved and has obtained maximum profit. The average CAR is 24.19% higher than the minila CAR limit of 12%. The most important thing is the NPF ratio because it is at an unsafe level of 6.75% while the maximum NPF score on BPRS is 5%. The higher the NPF value will reduce the equity of the BPRS and will lead to a decrease in the profit that will be received by the BPRS. So it is necessary to carry out stricter supervision in distributing financing, especially to MSMEs.

Based on Table 4, which provides the descriptive statistics for the data from 2017 to 2022, we can see the following characteristics: MSME financing ranged from a minimum of 329 million to a maximum of 2.459 billion, with an average value of 248 million. Efficiency values were between 0.84 and 1.00, averaging 0.95. BPRS assets and deposits had average values of 5.4 billion and 1.02 billion, respectively. The average NPF (Non-Performing Financing) was 10.18%, and the average CAR (Capital Adequacy Ratio) was 24.05%. In terms of data distribution, the skewness values for all variables were positive. This indicates that the data for these variables is skewed to the right, meaning the tail of the distribution is longer on the right side. The only exceptions were the variables for efficiency and ROA, which had a negative skew. Additionally, every variable in the dataset had a positive kurtosis value. A positive kurtosis suggests that the data distribution is leptokurtic that is, it has a sharper peak and fatter tails compared to a standard normal distribution. This study uses data on financing MSMEs, deposits, and assets that are influenced by a variable monetary scale. Therefore, in making a

regression model, MSME financing is used as a dependent variable on efficiency, assets, deposit savings, NPF, CAR, inflation, and BI interest rates as independent variables.

Table 3. Average MSME Financing, Efficiency, Deposits, NPF, CAR (By Year)

Year	MSE-F (in IDR000)	Efficiency	Deposits (in IDR000)	NPF (%)	CAR(%)
2019	9.943.320	1	8.731.890	7	20
2020	10.681.499	1	9.819.043	7	29
2021	11.983.800	1	11.591.692	6	23
2022	12.890.092	1	11.709.690	7	25
Average	**11.374.663**	**1**	**10.463.078**	**6,75%**	**24,19**

Source: Data observed (2023)

Table 4. Statistics Description of Period 2017-2022

	MSE-F (in IDR000)	Efficiency	Deposits (in IDR000)	NPF (%)	CAR (%)
Minimum	329.000	0.84	4.300.007	4,29	17.99
Maximum	2.459.961	1.000	6.460.014	65	33.26
SD	442.705	0.057	2.180.130	9.20	3.94
Mean	248.567.900	0.95	1.020.012	10.18	24.05
Skewness	2.54104	-0.89	29.59346	2.51	0.72
Kurtosis	9.486.018	2.20	877.181.900	10.35	2.75

Source: Data observed (2023)

The Relationship Between BPRS Efficiency and BPRS Financing for MSMEs in Indonesia

This section explores the connection between BPRS efficiency and MSME financing in Indonesia from 2019 to 2022. According to the data reported in Table 5, which presents the correlation coefficients among the independent variables, all variables included in the regression model exhibit correlation values below the threshold of 0.8. This outcome indicates the absence of a strong correlation between the explanatory variables, thereby reducing the likelihood of multicollinearity. Such a condition is essential for maintaining the reliability and validity of the regression results, since it guarantees that every independent variable adds distinctively to the explanation of the dependent variable.

Table 5. Independent Variable Correlation Matrix

	Efficiency	DPK	FDR	NPF	CAR	Inflation	Interest
Efisiensi	1						
Assets	-0.0982						
DPK	0.0266	1					
FDR	0.0783	-0.0138	1				
NPF	-0.0025	0.0026	-0.1494	1			
ROA	-0.1022	0.0503	0.0494	0.0702			
CAR	0.0203	0.0237	0.0128	-0.0365	1		
Inflation	0.0986	-0.0387	-0.0627	-0.0503	-0.2168	1	
Interest	-0.1255	0.0156	0.0132	0.0396	-0.2421	-0.2800	1
Economic growth	0.0445	0.0084	0.0095	-0.0007	0.0111	0.0547	-0.1398

Source: Data observed (2023)

Defining an Estimation Model

Determining the most suitable regression model for panel data involves three primary approaches: Ordinary Least Square (OLS), Fixed Effect (FE), and Random Effect (RE) models (Ghozali 2008). To select the best model, a series of tests are conducted. The first is the Chow Test, which helps decide between the OLS model and the Fixed Effect model. This test is performed by examining the probability value (Prob > F) from the Fixed Effect Model (FE) test results. The hypothesis on the CHOW Test is as follows: H0 = Ordinary Least Square (OLS); H1 = Fixed Effect Model (FE). Based on the results of the CHOW test and in processing this data shows a probability value below 0.05, Ho is rejected, which means that the model used is FE.

The second test is the Lagrangian multiplier (LM) Test with the following hypothesis: H0 = Ordinary Least Square (OLS); H1 = Random Effect Model (RE). Based on the results of the LM Test, it shows that the probablitias value is less than 0.05 which means that H0 is rejected and the model used is Random Effect Model (RE). Then the third test was carried out, namely the Hausman Test. Hausman's test hypothesis is as follows: H0 = Random Effect Model (RE); H1 = Fixed Effect Model (FE). Based on the Hausman test, it shows a probability value of 0.99 greater than the alpa of 0.05, meaning that H0 is accepted and the model chosen is the Random Effect Model (RE). From the above tests, it can be concluded that the best model is the Random Effect Model (RE). The estimation of providing financing to MSMEs by BPRS in Indonesia has been carried out several methods: OLS, FE, and GLS

CONCLUSIONS

This research examined the relationship between the efficiency of Sharia Rural Banks (BPRS) and MSME financing in Indonesia from 2019 to 2022. While previous studies have often focused on the efficiency of general banks, this study specifically analyzed a sample of BPRS to see their unique role in supporting MSMEs. Thus, this research serves as an important enhancement to the current literature. To conduct the study, data from all BPRS in Indonesia was collected from official sources like the Financial Services Authority (OJK), Bank Indonesia (BI), and Statistics Indonesia (BPS). Efficiency was calculated using the Data Envelopment Analysis (DEA) method, and the relationship was analyzed using panel data. The study's findings reveal that BPRS efficiency is directly related to its ability to provide financing. This highlights the importance of BPRS maintaining their operational efficiency to boost their financing to MSMEs.Based on these conclusions, the research provides two key recommendations: For policymakers such as Bank Indonesia and the OJK, it is crucial to create regulations that support BPRS in improving their capacity to provide financing to MSMEs. For future research, this study can serve as a foundation for comparative analysis between the efficiency of conventional BPRs and sharia BPRS in Indonesia.

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