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The Influence of CAR, OER and FDR on Profitability with NPF as a Moderating Variable in Bank Umum Syariah Indonesia 2019-2023

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Abstract. This research aims to examine the influence of Capital Adequacy Ratio, Operational Efficiency Ratio and Finance To Deposit Ratio on Profitability with Non-Performing Financing as a moderating variable in Bank umum syariahs in Indonesia for the 2019-2023 period. This research uses quantitative methods with MRA as a data analysis tool. By using a purposive sampling technique, a sample of 9 Bank umum syariahs registered with the Financial Services Authority (OJK) was obtained. This research uses secondary data in the form of panel data from annual financial reports published on the official websites of each bank. The analysis used in this research is multiple linear regression analysis with Eviews version 10 software. The results show that the Capital Adequacy Ratio, Operational Efficiency Ratio and Non Performing Financing partially have a significant negative effect on profitability, while the Finance To Deposit Ratio partially has no effect on profitability. . The results of the moderation test show that Non Performing Financing is able to moderate the influence of the Operational Efficiency Ratio on profitability, but Non Performing Financing is unable to moderate the influence of the Capital Adequacy Ratio and Finance To Deposit Ratio on profitability.

Keywords: Capital Adequacy Ratio,Operational Efficiency Ratio, Finance To Deposit Ratio, Profitabilitas, Non Performing Financing

1 Introduction

Basically, Islamic banks exist to provide facilities for people who want to carry out financial transactions based on Islamic sharia principles. In the era of digitalization, companies have more and more competitors, so good company financial performance is needed. The financial performance of a company can be measured from the way its operations are carried out. Usually, analyzing existing financial reports will help interested parties to evaluate the information. However, each company has a different assessment of financial performance, usually based on the scope of each company (Utami & Pardanawati, 2016).

The success of bank performance can be measured from the health level of Islamic banks. The way to do this is by using profitability. Profitability is the profit obtained after tax with core capital before tax based on the total assets owned by the bank in a certain period (Siamat & Dahlan, 2004). Profitability can be calculated using Return On Assets (ROA) and Return On Equity (ROE). ROA is a reference for Indonesian banks compared to ROE, where some of the assets are savings from the public because it better represents the financial performance of sharia banking, while ROA is used to measure management's ability to generate profits or profit.

If ROA decreases, it will affect profitability and worsen the company's position. Conversely, if ROA increases, profitability will increase and the company's position will improve. Therefore, ROA is used to assess company performance in seeing the growth in profitability of a bank or company. The ratios that can influence a bank's Return On Assets (ROA) are the Capital Adequacy Ratio (CAR), Operational Efficiency Ratio (OER), Financing to Deposit Ratio (FDR), and Non-Performing Financing (NPF).

There are several internal factors that influence the profitability ratio of Islamic banking, namely the Capital Adequacy Ratio (CAR) which plays an important role. CAR describes the level of a bank's financial health by comparing the bank's capital with the risks it faces. CAR is a bank performance ratio to measure the adequacy of capital owned by the bank to support assets that produce risk(Hanafia & Karim, 2020).

Another factor that influences the high and low levels of profitability of Indonesian sharia banks is the operational costs used to finance sharia bank activities. Therefore, cost efficiency is an important thing to pay attention to. The ratio to measure operational cost efficiency is to use the Operational Efficiency Ratio (OER).

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OER is by comparing Operational Costs to Operational Income or what is usually called BOPO. BOPO is also able to see the bank's efficiency in managing its finances(Puspitasari et al., 2021).

Another factor that influences profitability is the Financing to Deposit Ratio (FDR). FDR is a financial ratio that measures a bank's ability to channel funds obtained from customer savings (deposits) into loans or financing. This ratio shows how effectively the bank uses available funds to provide credit or financing to customers. FDR shows the level of the bank's ability to channel third party funds (Ramadhani, 2023).

This research uses the moderating variable Non Performing Financing to test whether Non Performing Financing can moderate (strengthen or weaken) the influence of Capital Adequacy Ratio, Operational Efficiency Ratio and Finance To Deposit Ratio on Profitability in Bank umum syariahs in Indonesia.

The Non Performing Financing Ratio (NPF) is used as an indicator of the quality of financing disbursed by banks. NPF can measure bank liquidity, NPF can show the condition of the bank's ability to withdraw funds distributed to customers from financing activities, which is one source of liquidity (Ariani et al., 2022).

2 Research Methods

The object used in this research is a bank umum syariah registered with the Financial Services Authority (OJK). The population in this study was 13 Islamic commercial banks. The technique used in sampling is purposive sampling, namely a method of determining data source samples based on special considerations (Sugiyono, 2013).The sampling criteria in this research were bank umum syariahs registered with the Financial Services Authority with published financial reports from 2019 to 2023. Based on the predetermined sampling criteria, a sample of 9 bank umum syariah was obtained.

This research uses a quantitative type of research using secondary data obtained through the websites of each Islamic commercial bank. The data taken comes from the annual financial reports of sharia banks from 2019 to 2023. The data collected includes CAR, OER, FDR, ROA and NPF. After obtaining data regarding CAR, OER, FDR, ROA, and NPF. Then data analysis was carried out. The analysis used in this research is multiple linear regression analysis. Then the classical assumption test consists of the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. Next, test the hypothesis with the coefficient of determination, F test (simultaneous), T test (partial), and MRA test (moderation).

3 Results and Discussion

3.1 Stationarity Test

Stationarity testing in this research was carried out using Unit Root Tests with the Levin, Lin & Chu test. Where a variable is said to be stationary if its probability value is smaller than the significance level of 0.05 (Winarno, 2015). The following are the results of the stationarity test:

Table 1. Results Stationarity Test

No.	Variable	Prob**	Information	Level
1.	X1 (CAR)	0,0000	Data Stasioner	Level
2.	X2 (OER)	0,0004	Data Stasioner	Level
3.	X3 (FDR)	0,0000	Data Stasioner	Level
4.	Y (ROA)	0,0000	Data Stasioner	Level
5.	Z (NPF)	0,0000	Data Stasioner	Level
6.	X1Z	0,0000	Data Stasioner	Level
7.	X2Z	0,0000	Data Stasioner	Level
8.	X3Z	0,0000	Data Stasioner	Level

Sumber: Data sekunder diolah, 2024

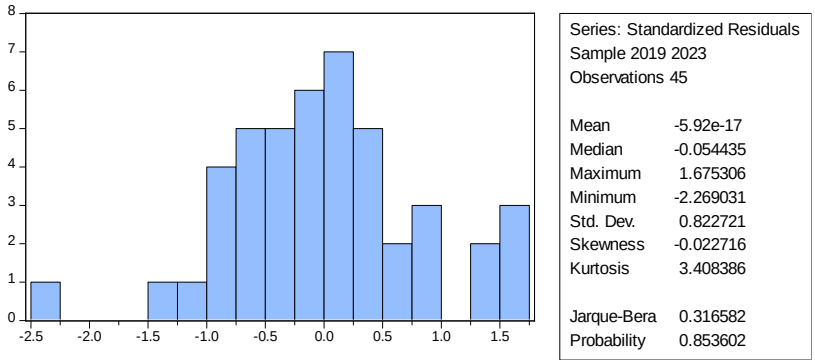
Based on Table 1, information is obtained that the data in this study is stationary, showing a value of <0.05. This means that all variables, both independent, dependent and moderating variables have met the requirements of the stationarity test so that it is appropriate to carry out further data testing.

3.2 Classical Assumption Tes

3.2.1 Normality Test

According to Dr. Ansofino et al. (2016) This Normality Test aims to test whether in the regression model the dependent variable and independent variables have a normal distribution. The following are the results of the normality test in this study:

Table 2. Results Normality Test



Sumber: Data sekunder diolah, 2024

Based on Figure 2, it is known that the Jarque-Bera value is 0.316582 and the probability is 0.853602 > 0.05, meaning that the research data is normally distributed.

3.2.2 Multicollinearity test

The multicollinearity test is used to detect the presence of high correlation between independent variables in the regression model, which can interfere with the coefficient estimates and make the analysis results unstable. The following are the results of the multicollinearity test in this study:

Table 3. Results *Multicollinearity Test*

	X1	X2	X3	Z
X1	1.000000	-0.431230	0.315214	-0.237562
X2	-0.431230	1.000000	0.059468	0.356939
X3	0.315214	0.059468	1.000000	0.279258
Z	-0.237562	0.356939	0.279258	1.000000

Sumber: Data sekunder diolah, 2024

Based on Table 3, it is known that the value obtained is <0.90, so the conclusion is that there are no symptoms of multicollinearity.

3.2.3 Heteroscedasticity Test

The Heteroscedasticity Test aims to test whether in a regression equation model there is non-uniformity of variance from the residuals of one observation to another (Juliandi et al., 2014). The following are the results of the heteroscedasticity test:

Table 4. Results *Heteroscedasticity Test*

Dependent Variable: RESABS
Method: Panel Least Squares
Date: 08/07/24 Time: 22:20
Sample: 2019 2023
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.136586	1.315969	0.863687	0.3948
X1	0.013485	0.018109	0.744653	0.4625
X2	-0.011732	0.013389	-0.876245	0.3881
X3	0.001310	0.010276	0.127508	0.8994

Z	-0.453549	0.518280	-0.875104	0.3887
X1Z	-9.81E-05	0.006923	-0.014176	0.9888
X2Z	0.005299	0.005189	1.021220	0.3156
X3Z	-0.000104	0.004617	-0.022593	0.9821

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.462791	Mean dependent var	0.544329
Adjusted R-squared	0.184924	S.D. dependent var	0.388137
S.E. of regression	0.350416	Akaike info criterion	1.012352
Sum squared resid	3.560945	Schwarz criterion	1.654720
Log likelihood	-6.777911	Hannan-Quinn criter.	1.251820
F-statistic	1.665512	Durbin-Watson stat	2.641120
Prob(F-statistic)	0.116260		

Sumber: Data sekunder diolah, 2024

Based on Table 4, the probability values for all variables show values > 0.05 so that it can be concluded that there are no symptoms of heteroscedasticity.

3.2.4 Autocorrelation test

The autocorrelation test aims to test whether there is a correlation between the residual value or error in period ttt and the residual value or error in period t−1t - 1t−1 (previous period) in a regression model. The following are the results of the autocorrelation test in this study:

Table 5. Results *Autocorrelation* test

R-squared	0.940879	Mean dependent var	1.680444
Adjusted R-squared	0.910300	S.D. dependent var	3.383628
S.E. of regression	1.013398	Akaike info criterion	3.136239
Sum squared resid	29.78227	Schwarz criterion	3.778608
Log likelihood	-54.56538	Hannan-Quinn criter.	3.375708
F-statistic	30.76811	Durbin-Watson stat	2.076101
Prob(F-statistic)	0.000000		

Sumber: Data sekunder diolah, 2024

Based on these calculations, a comparison table of DW values is obtained as follows:

Table 6. Comparison of DW Values

Nilai dL	Nilai dU	Nilai DW	Nilai 4-dU	Nilai 4-dL
1.3357	1.7200	2.076101	2.2800	2.6643

Sumber: Data sekunder diolah, 2024

Based on Table 6, it can be concluded that dU ≤ $DW \leq 4 - dU$, so there is no autocorrelation.

3.3 Hypotheses Test

To find out which hypotheses are accepted and rejected, a hypothesis test is carried out using EViews 10 software. Based on the analysis results obtained, further information regarding the results of the hypothesis test is as follows:

Table 7. Results Hypotheses

Dependent Variable: Y
Method: Panel Least Squares
Date: 08/07/24 Time: 22:16
Sample: 2019 2023
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25.80655	3.805765	6.780910	0.0000
X1	-0.150344	0.052370	-2.870819	0.0076
X2	-0.197386	0.038719	-5.097837	0.0000
X3	-0.037314	0.029719	-1.255583	0.2193
Z	-5.814118	1.498860	-3.879027	0.0006
X1Z	0.021360	0.020022	1.066793	0.2949
X2Z	0.039278	0.015007	2.617356	0.0139

X3Z	0.019376	0.013354	1.451003	0.1575
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.940879	Mean dependent var		1.680444
Adjusted R-squared	0.910300	S.D. dependent var		3.383628
S.E. of regression	1.013398	Akaike info criterion		3.136239
Sum squared resid	29.78227	Schwarz criterion		3.778608
Log likelihood	-54.56538	Hannan-Quinn criter.		3.375708
F-statistic	30.76811	Durbin-Watson stat		2.076101
Prob(F-statistic)	0.000000			

Sumber: Data sekunder diolah, 2024

3.3.1 Coefficient Determination (R^2)

The coefficient of determination (R^2) is used to determine the magnitude of the influence of the independent variable in explaining the dependent variable. Based on Table 7, in this study the Adjusted R-squared value is 0.910300, meaning that the independent variable can explain 91.03% of the dependent variable, the remaining 8.97% is explained by other variables outside the research.

3.3.2 F Test

The F test is used to test the overall significance of the regression model, namely to find out whether the independent variables together have a significant influence on the dependent variable. Based on Table 7, Prob(F-statistic) shows a value <0.05, which is 0.000000. This means that the CAR, OER and FDR variables together or simultaneously influence the ROA variable in Islamic commercial banks.

3.3.3 T Test

The t test is used to test the significance of the regression coefficient partially, namely to find out whether each independent variable has a significant influence on the dependent variable individually. The t test can also be used to find out which hypotheses are accepted and rejected. A hypothesis is accepted if the probability value is <0.05, whereas if the probability value is >0.05, then the hypothesis is rejected. The following is a description of the results of data processing using Eviews 10 which can be seen from Table 7.

1. CAR Against ROA
   The coefficient value is -0.150344 and the Prob value is 0.0076 <0.05, meaning that the CAR variable has a significant negative effect on ROA. This means, **H1 is accepted.**
2. OER Against ROA
   The coefficient value is -0.197386 and the Prob value is 0.0000 <0.05, meaning that the OER variable has a significant negative effect on ROA. This means, **H2 is accepted.**
3. FDR Against ROA
   The coefficient value is -0.037314 and the Prob value is 0.2193 > 0.05, meaning that the FDR variable has no effect on ROA. This means, **H3 is rejected.**
4. NPF Against ROA
   The coefficient value is -5.814118 and the Prob value is 0.0006 <0.05, meaning that the NPF variable has a significant negative effect on ROA. This means, **H4 is accepted.**

3.3.4 MRA Test

The results of the MRA regression test in Table 7 can be entered in the form of the following equation: Y = 25.80655 – 0.150344X1 – 0.197386X2 – 0.037314X3 – 5.814118Z + 0.021360X1Z + 0.039278X2Z + 0.019376X3Z The above equation can be described as follows:

1. CAR to ROA Moderated by NPF
   The coefficient value is 0.021360 and the Prob value is 0.2949 > 0.05, meaning that the NPF variable is unable to moderate the influence of CAR on ROA. This means, **H5 is rejected.**
2. OER to ROA Moderated by NPF
   The coefficient value is 0.039278 and the Prob value is 0.0139 <0.05, meaning that the OER variable is able to moderate the influence of OER on ROA. This means, **H6 is accepted.**
3. FDR Against NPF Moderated ROA
   The coefficient value is 0.019376 and the Prob value is 0.1575 > 0.05, meaning that the FDR variable is unable to moderate the influence of FDR on ROA. This means, **H7 is rejected.**

3.4 Discussion

Based on the results of the data analysis test using Eviews 10, the discussion of the hypothesis test results is as follows:

3.4.1 Influence of CAR on ROA

Based on the results of the multiple linear regression test, the coefficient value for the CAR variable was obtained at a coefficient value of -0.150344 with a probability value of 0.0076 which is smaller than 0.05, meaning that CAR has a negative effect on ROA so it can be concluded that hypothesis 1 is accepted. The results of this research are in line with the results of previous research conducted by Kessek et al., (2024) and(Ashari et al., 2024).which states that CAR has a negative influence on ROA.

CAR has a negative effect on profitability (ROA), meaning that if CAR increases, ROA will decrease. If CAR has a negative effect on profitability (ROA), this means that when CAR increases, ROA tends to decrease. This can happen because an increase in CAR indicates that banks are holding more capital to maintain stability and reduce risk (Ashari et al., 2024). By holding more capital, banks may be more cautious about taking investment or lending risks, which could ultimately limit the potential income that can be generated from productive assets. As a result, although banks become more financially secure, the efficiency of asset use is reduced, leading to a decrease in ROA. A CAR that is too high can hinder a bank's ability to generate optimal profitability because it limits credit distribution and business growth opportunities.

3.4.2 Influence of OER on ROA

Based on the results of the multiple linear regression test, the coefficient value for the OER variable was obtained at a coefficient value of -0.197386 with a probability value of 0.0000 which is less than 0.05, meaning that OER has a significant negative effect on ROA so it can be concluded that hypothesis 2 is accepted. The results of this research are in line with the results of previous research conducted by Silitonga & Wirman (2022), M. Z. Ramadhan & Amalia (2023)and Widjiantoro (2023). Which states that OER has a significant negative influence on ROA.

OER has a negative effect on profitability (ROA), meaning that if OER increases, ROA will decrease. OER can also reduce a bank's capacity to invest in the growth and innovation necessary to maintain long-term competitiveness. Therefore, banks need to find the right balance in increasing operational efficiency to achieve optimal ROA. OER reflects how much a bank's operational costs are in relation to its operating income. If OER increases, this indicates that the bank's operational costs are greater than the income generated. This can reduce bank profit margins and suppress profitability, which is reflected in a decrease in ROA. The higher the OER, the greater the costs that must be incurred to generate income, so that the bank's effectiveness in using assets to generate profits decreases.

3.4.3 Influence of FDR on ROA

Based on the results of the multiple linear regression test, the coefficient value for the FDR variable was obtained at a coefficient value of -0.037314 with a probability value of 0.2193 greater than 0.05, meaning that FDR has no effect on ROA so it can be concluded that hypothesis 3 is rejected. The results of this research are in line with the results of previous research conducted by (Monoarfa et al., 2020)which stated that FDR has no effect on ROA.

FDR has no effect on ROA because FDR reflects the efficiency of the bank's use of third party funds in financing, rather than direct profitability as measured by ROA. FDR measures the proportion of customer funds channeled in the form of financing or credit, but does not directly describe how much profit the bank obtains from these assets. Although FDR reflects a bank's ability to distribute credit, its impact on profitability is also influenced by other factors such as financing quality, credit risk level, and operational costs, so it does not always correlate directly with an increase or decrease in ROA (Monoarfa et al., 2020). Although FDR is important in measuring how well a bank mobilizes funds for financing, its direct relationship with profitability may not be significant because various other factors, such as asset quality, operational efficiency, and macroeconomic conditions are more dominant in determining ROA. This shows that even though a bank has a good FDR level, this does not necessarily directly affect profitability as reflected in ROA.

3.4.4 Influence of NPF on ROA

Based on the results of the multiple linear regression test, the coefficient value for the NPF variable was obtained at a coefficient value of -5.814118 with a probability value of 0.0006 which is smaller than 0.05, meaning that NPf has a significant negative effect on ROA so it can be concluded that hypothesis 4 is accepted. The results of

this research are in line with the results of previous research conducted by Almunawwaroh (2022) and Hakim et al. (2023).Which states that NPF has a significant negative influence on ROA.

NPF has a negative and significant effect on profitability (ROA), meaning that if NPF increases, ROA will decrease. NPF reflects the level of problematic financing or bad credit that a bank has. If the NPF increases, this indicates that more financing is not running smoothly or is at risk of default, thereby reducing the income that can be obtained from the bank's productive assets. Banks also need to set aside reserves to cover potential losses from problematic financing, which increases costs and reduces net profits. As a result, bank profitability falls, which is reflected in a decrease in ROA (Almunawwaroh 2022). A high NPF level can have a negative impact on the bank's health, while a low NPF level indicates a smaller risk of loss for the bank. With capital adequacy (CAR), banks can fulfill operational activities ideally and can influence bank profits efficiently.

3.4.5 The effect of CAR on ROA moderated by NPF

Based on the results of the linear test for the CAR variable moderated by NPF, a coefficient value of 0.021360 was obtained with a probability value of 0.2949 greater than 0.05, meaning that NPF cannot moderate the influence of CAR on ROA so it can be concluded that hypothesis 5 is rejected.

NPF may not be able to moderate the relationship between CAR and ROA because NPF is more related to the quality of financing provided by banks, while CAR measures capital adequacy to cover risks. Even though NPF and CAR are both related to risk, their focus is different. NPF reflects problems in productive assets, while CAR reflects the readiness of bank capital to face these risks, so NPF may not play a moderating role in the relationship between CAR and ROA. When NPF is high, it reflects poor financing quality, which can reduce profitability, but the impact can be independent of how well the bank meets minimum capital requirements (CAR). In other words, even though CAR shows that the bank has sufficient capital to cover risk, a high NPF can still cause losses that cannot be offset by capital adequacy, so it does not moderate the effect of CAR on ROA.

3.4.6 The effect of OER on ROA moderated by NPF

Based on the results of the linear test for the OER variable moderated by NPF, a coefficient value of 0.039278 was obtained with a probability value of 0.0139, which is smaller than 0.05, meaning that NPF can moderate the influence of CAR on ROA so it can be concluded that hypothesis 6 is accepted.

NPF can moderate the relationship between OER and ROA because NPF reflects the level of credit risk faced by the bank. When the NPF is high, this indicates that there is a lot of financing problems, which can worsen operational efficiency (OER) and reduce profitability (ROA). Conversely, if the NPF is low, operational efficiency may be more effective in increasing profitability because the risk of financing problems is smaller. Thus, NPF can strengthen or weaken the influence of OER on ROA, depending on the level of financing risk managed by the bank. NPF can strengthen or moderate the relationship between OER and ROA, where the level of credit risk exacerbates the negative influence of OER on profitability.

3.4.7 The effect of FDR on ROA moderated by NPF

Based on the results of the linear test for the FDR variable moderated by NPF, a coefficient value of 0.019376 was obtained with a probability value of 0.1575 greater than 0.05, meaning that NPF cannot moderate the influence of FDR on ROA so it can be concluded that hypothesis 7 is rejected. The results of this research are in line with the results of previous research conducted by Wahidah (2020). Which states that the NPF cannot moderate FDR against ROA.

NPF cannot moderate the relationship between FDR and ROA because NPF focuses more on the quality of problematic financing, while FDR measures the extent to which third party funds are used for financing. If the NPF is high, this indicates increased credit risk, which can reduce the effectiveness of financing in generating profits, thereby neutralizing or even eliminating the potential positive impact of FDR on ROA. In a situation like this, even though the bank has succeeded in channeling financing well, the high NPF indicates problems in managing credit risk, which ultimately hinders FDR's contribution to increasing ROA. Even though NPF and FDR relate to financing aspects, their focus is different, NPF is related to the risk of problematic financing, while FDR is more about financing volume. This makes NPF irrelevant as a moderator in the relationship between FDR and ROA.

4 Conclusion

The aim of this research is to examine the influence of Capital Adecquacy Ratio (Car), Operational Efficiency Ratio (Oer) and Finance To Deposit Ratio (Fdr) on Profitability (Roa) with Non Performing Finance (Npf) as a

Moderating Variable in Bank umum syariahs in Indonesia period 2019-2023. The conclusions from the research results are that the Capital Adecquacy Ratio, Operational Efficiency Ratio and Non-Performing Finance variables have a significant negative effect on profitability, while the Finance To Deposit Ratio variable has no effect on profitability.

Non-Performing Finance variables are not able to moderate the influence of the Capital Adecquacy Ratio and Finance To Deposit Ratio on the profitability of Islamic banks, while the Non-Performing Finance variables are able to moderate (strengthen) the influence of the Operational Efficiency Ratio on the profitability of Islamic banks.

Suggestions can be in the form of input for future researchers, and can also be recommendations for implications from research findings. Based on the discussion and also the limitations of the research, the author has suggestions for future researchers so that when conducting further research they can pay attention to other aspects that are very likely to be researched, in order to further expand the scope of the research being carried out. Future researchers are expected to first determine the object that will be used as research material so that in the writing process they can minimize the obstacles that will be found. And for future research, it is hoped that researchers can take more samples, so that the results obtained will be better and more accurate.

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