

Can credit quality as a moderating variable in increasing profitability: study on conventional commercial banks listed on the Indonesia stock exchange

Sriyono Sriyono^{1*}, Ana Nabellah²

^{1,2}Management Study Program, University of Muhammadiyah Sidoarjo, Indonesia

*Corresponding email: sriyono@umsida.ac.id

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ananabellah88@gmail.com

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Abstract

Purpose: Increasing Profitability is necessary for a business so that business activities can still exist. Many previous studies have examined this matter. However, none have used credit quality as a moderating variable. This study aims to determine whether credit quality can be moderated to increase profitability.

Methodology: The population used is Conventional Commercial Bank Companies listed on the Indonesia Stock Exchange. The sample of this research is 80 conventional commercial bank companies listed on the Indonesia Stock Exchange. The sampling technique uses purposive sampling—data analysis using Partial Least Square with Smart PLS 3.0 software.

Finding: The result found a relationship between Capital Adequacy Level, Credit Distribution, Credit Quality, and Profitability. It showed that the level of capital adequacy has a positive effect on profitability. Credit quality cannot moderate the relationship between capital adequacy and lending to profitability.

Research limitation/Implication: This research was only conducted on conventional banks listed on the Indonesian stock exchange. The variables studied are only limited to financial factors

Practical Implication: The management will understand that the strategy to increase profitability does not require credit quality support through the research results. The use of moderating variables is expected to provide a new model for increasing profitability

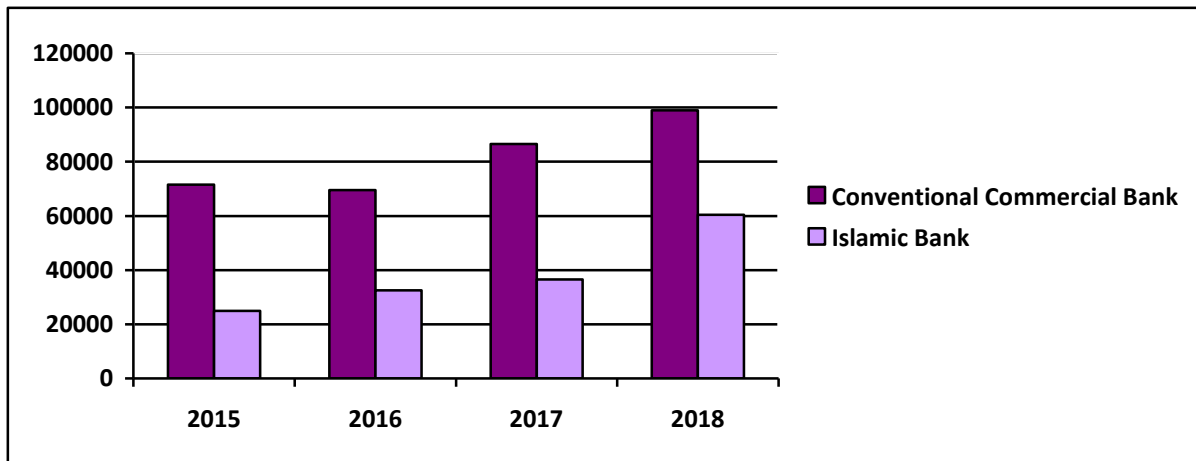
Originality: In increasing profitability, the researcher offers a new model by using credit quality as a moderating variable.

Keywords: Capital Adequacy Level, Credit Distribution, Profitability, Credit Quality.

Introduction

The development of the banking sector has grown rapidly, which can dominate economic activities in Indonesia, namely in increasing development and economic growth in Indonesia. According to the Banking Act No. 10 of 1998 and the amendment of Law No. 7 of 1992 in article 1 paragraph (2) Banking Act, 1998, a Bank is a business entity that collects funds from the public in the form of savings and distributes them to them in the form of credit or other forms to improve the standard of living.

The development of banking in Indonesia as in Graph 1. From Graph 1, it can be explained that conventional and Islamic banking companies have very different profit growth. The graph above shows that conventional banks have higher profits than Islamic banks (in billion rupiahs).



Source: Financial Services Authority (in billion)

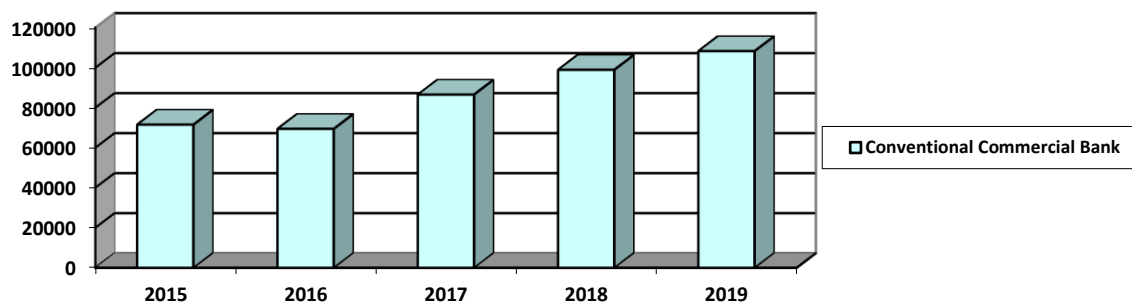
Graph 1. Profit Growth of Conventional Banks and Islamic Banks

Thus, Conventional Commercial Banks are the prima donna of the most significant contribution to the Indonesian economy in terms of lending to the public compared to Islamic Commercial Banks. The research object in this study is an established general banking company listed on the Indonesia Stock Exchange (IDX).

The rapid development of the banking industry, especially conventional commercial banks, has led to competition that directly or indirectly affects bank profitability. This study uses several ratios that affect bank profitability, namely the Capital Adequacy Ratio, lending, and credit quality as moderating variables.

The company's main goal is to maximize profits and increase company value through assets or all owned capital (Saona, 2011). Therefore, the profitability ratio is the main measure of company performance. If a company can generate large profits with increasing profit growth over the years, it can say that it is good. The high level of profitability describes the good performance of a company, which means that the bank has been operating effectively and efficiently (Langodai & Lutfillah, 2019).

However, obtaining high profitability or continuing to increase is not as easy as desired. This is because the difference between bank operating costs and income is not balanced (Najjar, 2013). The following are the profitability conditions of conventional commercial banks as follows:



Source: Financial Services Authority (In billion)

Graph 2. Profit Growth of Conventional Banks and Islamic Banks

Capital adequacy (CAR) is one factor that plays an important role in a company's performance (Corcoran, 2010). Therefore, the adequacy of the *Capital Adequacy Ratio* is very important for a bank. A good *Capital Adequacy Ratio* will have good Profitability (Shingjergji & Hyseni, 2015). With good bank capital requirements, the bank will be able to operate properly. (Eniola & Ektebang, 2014). According to (Almazari, 2013) explains that capital adequacy affects profitability. Meanwhile, (Setiawan, 2017) explains that CAR does not affect profitability.

Credit distribution is the main activity of banks in carrying out their operational activities. To is because the bank's main source of funding comes from its fund distribution activities. The greater the distribution of funds in the form of credit than deposits or public deposits in a bank, the greater the profitability income becomes (Suardita & Putri, 2015). According to (Rengasamy, 2014), LDR has a positive effect on Profitability (ROA). Meanwhile, according to (Septiani & Lestari, 2016), LDR has no significant positive effect on profitability.

Can credit quality moderate the relationship between the independent variable and the dependent variable? Research conducted by (Rinawati, 2019) explains that credit quality cannot moderate the relationship between capital and profitability. Research on credit quality was also carried out by (Nabellah, 2021), who explained that credit quality could moderate Operational Expenditure to Operating Income (BOPO). Research on credit quality is conducted in Indonesia and in foreign countries, such as China, which was conducted by (Ali et al., 2019), explaining that credit quality is used as a moderating variable of company performance.

With various research results showing that credit quality can moderate the company's performance and BOPO variables, the researcher uses the credit quality variable as a moderating variable of the relationship between capital adequacy and lending to profitability. To distinguish this research from previous research, the researcher applied a moderating variable of credit quality proxy for *Non-Performing Loans* (NPL).

The purpose of this study was to determine whether credit quality can moderate the relationship between the level of capital adequacy and lending to profitability. Research is significant because it provides important information for banks. The contribution of the research is substantial for banking management. Through the results of this research, banking management will easily understand how to Increase profitability.

Literature Review and Hypothesis

Capital adequacy is the ability of a bank in capital to cover possible losses in credit or securities trading. Profitability is the main goal of a company because it ensures the company's future. One of the ratios used to measure bank profitability is ROA. The higher the CAR achieved by the bank, the better the bank's performance and the bank's operations will run smoothly. Customer confidence in the bank increases so that the company's profitability will also increase; the company will benefit. Research conducted by (Olalekan & Adeyinka, 2013; Madugu, et al, 2020; Faizah, Rahmawati Nur & Saryadi, 2018; Bernardin, 2016) explains that the *Capital Adequacy Ratio* positively affects *Return on Assets*.

H0: Does Capital adequacy have a significant effect on profitability

H1: Capital adequacy has a significant effect on profitability

The level of lending or LDR (*Loan Deposit Ratio*) is the banks' ability in existing credit in providing funds to debtors with capital owned by the bank. LDR is the ratio used to measure the composition of the total credit. ROA is a ratio used to measure bank profitability. The greater the amount of credit disbursed by the bank, the profit on interest on loans obtained by the bank will also increase to affect the profitability obtained by the company. Research conducted by (Alshatti, 2015; Mismiwati, 2016; Santoso, 2016) explains that the level of lending (LDR) positively affects profitability.

H0: Does the Loan Deposit Ratio have no significant effect on profitability

H2: The Loan Deposit Ratio have a significant effect on profitability

The bank bears credit. Credit quality is the percentage of non-performing loans with criteria (loans in the current category, loans in the substandard category, loans in doubtful categories, and loans in the bad category) to the total loans disbursed by banks, the higher the quality of the loans, the smaller the risk. Non-performing loans (bad) increased due to lack of risk management, thus threatening bank profitability (Haneef et al., 2012). The capital adequacy level is a ratio that shows how far all bank assets that contain risks (credit and securities) are also financed from theirs—

capital funds and obtaining funds from other sources. Research conducted by (Yusuf & Surjaatmadja, 2018) explains that Credit Quality as a Moderating Variable cannot moderate the relationship between Capital Adequacy Ratio and Return on Assets.

In the world of banking, credit is the main element to make a profit. That means that the size of a bank's profit is strongly influenced by the amount of credit disbursed in a period. The more credit spent, the greater the profit (Berrios, 2013). If not on target, the high level of credit disbursement can lead to a greater risk of bad loans, so that it will affect the interest income received (Andika et al., 2018). (Ghosh, 2015) explained that credit quality cannot strengthen (weaken) the effect of the level of lending on Return on Assets.

H3: Enable credit quality as a moderating variable on the relationship between Capital adequacy, *Loan Deposit Ratio* on profitability

Structure Equation Model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Notes:

X_1 = Capital Adequacy Level

X_2 = Credit Distribution

X_3 = Credit Quality

Y = Profitability

e = error

Research Method

This research is quantitative research, given that it applied more numeric data in analyzing the facts found.

Table 1. Operational Definition, Variable Identification and Indicator Variable

No	Variable	Indicator Variable	Level of Measurement
1	Capital Adequacy Level (X_1) (Harmono, 2017)	$CAR = \frac{\text{Capital}}{\text{Total ATMR}} \times 100\%$	Ratio
2	Credit Distribution (X_2) (Taswan, 2013)	$LDR = \frac{\text{Credit}}{\text{Third Party Funds}} \times 100\%$	Ratio
3	Profitability (Y) (Harmono, 2017)	$ROA = \frac{\text{Earning before Tax}}{\text{Total Assets}} \times 100\%$	Ratio
4	Credit Quality (Z) (Taswan, 2013)	$NPL = \frac{\text{Credit problems}}{\text{Total Credits}} \times 100\%$	Ratio

Population and Sample

The population used in this study is a conventional commercial bank listed on the Indonesia Stock Exchange. The sampling technique was purposive sampling.

Table 2. Sampling technique using purposive sampling

No	Sampling Criteria	Company
1	Conventional commercial banking companies listed on the Indonesia Stock Exchange for the 2015-2018 period	42
2	Conventional general banking companies with profits including healthy criteria where $ROA > 1.22\%$ during the 2015 period -2018	20
Number of sample		20
Number of observations for four years (20 x 4)		80

Therefore, based on the criteria from the sample, the number of the sample determined in this study was 80 conventional banks.

Analysis Techniques

Before the data is tested for the hypothesis, a descriptive statistical test was carried out, which aims to determine the condition of the data ((Sugiyono, 2016). The next step is the Outer Model Test which aims to test Convergent Validity, Discriminant Validity, Composite Reliability, and Multicollinearity. After that, the Inner Model test is carried out (Ghozali & Latan, 2015). In the final stage, the hypothesis test is carried out using the t-test

Results and Discussion

Descriptive Statistics

Table 3. Test Results (Descriptive Statistics)

Indicators	Mean (billion)	Min (billion)	Max (billion)	Standard Deviation
level of adequacy of capital (X1)	21 620	14 920	35 120	4,101
Loans (X2)	89 949	55 350	145 260	12 049
Profitability (Y)	2267	1.3	4190	0802
credit Quality (Z)	2,403	0.510	4,770	0.941

Testing Results Measurement Model (Outer Model)

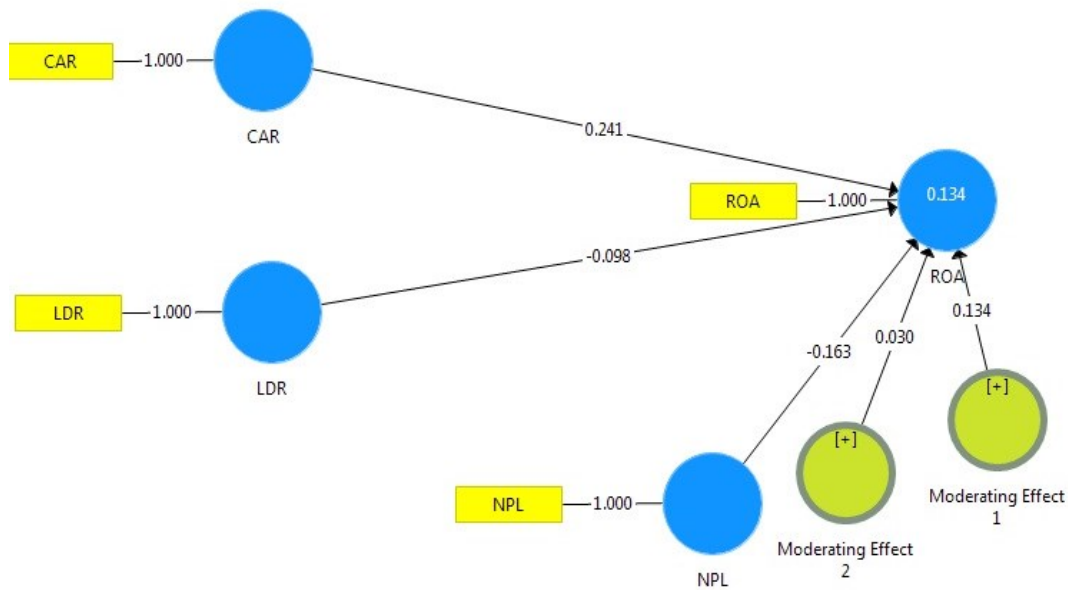


Figure 3. Retrieval of PLS Algorithm. Calculation Results

Table 4. Outer Loading Test Results

	CAR	LDR	CAR * NPL	LDR * NPL	NPL	ROA
CAR	1,000					
CAR * NPL			0.882			
LDR		1,000				
LDR * NPL				0.901		
NPL					1,000	
ROA						1,000

The results of the *convergent test validity* in Table 4 show that all loading factor values are above 0.7. It means that the data used is valid for use in further research or has met the criteria.

Table 5. Test Results Average Variance Extracted

Average Variance Extracted (AVE)
1,000
1,000
1,000
1,000
1,000
1,000

The AVE results in Table 5 show that all variables' AVE values have met convergent validity because all AVE values for each construct have met the criteria above 0.5.

Table 6. Test Results *Discriminant Validity*

	CAR	LDR	Moderating Effect 1	Moderating Effect 2	NPL	ROA
CAR	1,000	-0.208	0.271	-0.193	-0.070	0.299
CAR*NPL	0.271	-0.197	1,000	-0.273	0.101	0.179
LDR	-0.208	1,000	-0.197	-0.128	-0.119	-0.156
LDR*NPL	-0.193	-0.128	-0.273	1,000	-0.083	-0.025
NPL	-0.070	-0.119	0.101	-0.083	1,000	-0.159
ROA	0.299	-0.156	0.179	-0.025	-0.159	1,000

The *cross-loading* result in Table 6 shows that each latent variable indicator has a higher value than other constructs to fulfill the discriminant validity.

Table 7. Composite Reliability Values

Composite Reliability	Cronbach's Alpha
1000	1000
1000	1000
1000	1000
1000	1000
1000	1000
1000	1000

The reliability test results in Table 7 show that the *Cronbach alpha* and values *composite reliability* for each variable is above 0.70; it can be concluded that each construct variable is reliable or valid in this study.

Table 8. Multicollinearity Results of

Variable	VIF
Capital Adequacy Level (X1)	1000
Capital Adequacy Level * Credit QualityCredit	1000
Distribution (X2)	1000
Credit Distribution * Credit	1000
QualityCredit Quality (Z)	1000
Profitability (Y)	1000

The results of the test in Table 8 show that there is no multicollinearity between the independent variables. This can be seen from the VIF value <5 according to the recommended limit in the PLS.

Structural Model Testing Results (Inner Model)

1. Testing Results The coefficient of determination(R^2)

Table 9. Coefficient Determination Test Results

	R-Square
Profitability	0.134

The R-Square value in Table 9 is 0.134, which means that the construct of Capital Adequacy Level and Credit Distribution on Profitability with Credit Quality has a moderating variable of 13.4%. The remaining 86.6% of other variables are not explained in this study.

2. Test Results Effect size

The effect size value obtained is 0.0369, which indicates a small significant effect in this study. The moderation model used is the potential moderation model (*Homologiser Moderator*), which is meant by the potential moderation model, namely variables that have the potential or ability to become moderating variables but are not able to influence or be unable to moderate.

Hypothesis Testing

Table 10. Results of Analysis hypothesis Test

	Sample Original (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
CAR → ROA	0241	0252	0102	2355	0019
LDR → ROA	-0098	-0107	0086	1.145	0.253
CAR*NPL → ROA	0.134	0.141	0.136	0.988	0.324
LDR*NPL → ROA	0.030	0.041	0.108	0.279	0.781
NPL → ROA	-0.163	-0.162	0.099	1.655	0.099

The results of the analysis in Table 10 can be explained as follows:

1. The first hypothesis is accepted because X_1 (Capital Adequacy Level) to Y (Profitability) has a T-Statistics value > 1.96 , which is 2.355, and a P-Values value < 0.05 , which is 0.019. It can be interpreted that the Capital Adequacy Level has a significant effect on profitability.
2. The second hypothesis is rejected because X_2 (Lending) to Y (Profitability) has a T-Statistics value < 1.96 , which is 1.149, and a P-Values value < 0.05 , which is 0.253. It means that Credit Distribution has no significant effect on profitability.
3. The third hypothesis is rejected because the interaction between X_1 and Z (Capital Adequacy * Credit Quality) to Y (Profitability) has a T-Statistics value < 1.96 and a P-Values < 0.05 , which is 0.324. Capital Adequacy Level with Credit Quality has no significant effect on profitability.
4. The fourth hypothesis is rejected because the interaction between X_2 and Z (Credit Distribution*Credit Quality) to Y (Profitability) has a T-Statistics value < 1.96 and a P-Values value > 0.0 . So it can be concluded that the interaction of Credit Distribution with Credit Quality has no significant effect on profitability.

Discussion

1. The Effect of Capital Adequacy Level on Profitability

Based on the results of data analysis in Table 10, it is concluded that the Capital Adequacy Level has a significant and positive effect on profitability. That means that when CAR increases, profitability will also increase. If the bank has enough capital, it can channel greater credit to its customers. The greater the credit disbursed, the greater the profit it will get.

One of the important aspects of a bank's business unit is its capital adequacy, regardless of whether it operates or not or is trusted or not. The higher the capital of a bank, the higher the public trust to save their funds in the bank. This will have an impact on the increasing number of funds disbursed or profitability at the bank. CAR is a ratio that shows how far all bank assets contain risks (credit, investments, securities, claims on other banks). The risks are also financed from the bank's capital funds and obtaining funds from sources outside the bank, such as public funds and loans. (debt), and others. According to theory, the higher the CAR, the stronger the bank's ability to bear the risk of any risky credit/productive assets. The higher the CAR, the positive effect on profitability. Therefore, capital is an important factor in developing a bank's business. With sufficient capital, a bank can carry out its activities without experiencing difficulties and losses that may arise and then impact increasing profitability.

The capital adequacy ratio (CAR) is the capital adequacy ratio of banks and can affect the level of profitability of Islamic banks. There is a positive influence between the CAR ratio and bank profitability. That shows that the higher the CAR, the better the bank's ability to bear the risk of any risky earning assets. Previous research showed that Fitriana & Oetomo (2016) results stated that the CAR ratio had a significant positive effect on profitability. And in line with research conducted by Anggraini et al. (2016)

The results of this study have a similar result with (Haneef et al., 2012), proving that the Capital Adequacy Level has a significant and significant effect on profitability. This result is also in line with research (Rosyid & Irawan Noor, 2018), proving that the Capital Adequacy Level has a significant and significant effect on profitability. That means that the higher the Capital Adequacy Level, the higher the Profitability (Lall, 2014).

On the contrary, the results show a difference with (Boateng, 2018) that capital does not significantly affect profitability, which means the company is not motivated to increase its capital to show a good level of company capital adequacy. Similarities also appear with Agbeja et al. (2015; Oino, 2015), which state that capital has no significant effect on profitability. That is because high lending does not guarantee increased profitability (Prihartini & Dana, 2018). Other researchers (Khravish, 2011) explain that capital adequacy affects profitability. Meanwhile, according to (Rosyid & Irawan Noor, 2018), CAR does no effect on return on assets (ROA).

2. The Effect of Credit Distribution on Profitability

Based on the results of data analysis in table 10, it can be concluded that Credit Distribution does not affect profitability. This study is in line with the research results (Charles & Kenneth, 2013), showing that Credit Distribution does no effect on profitability. It is explained that the greater the disbursement of credit does not guarantee to increase profit or increase profitability because the amount of credit extended to customers regardless of the quality of the credit, the greater the possibility of bad loans that cause profit to decline. (Makkar & Hardeep, 2018)

The banking sector can be one of the most flexible sectors in responding to national economic conditions compared to other economic sectors. So far, banks have committed to improving people's lives, but in practice, banks remain a business institution that seeks profit. The distribution of bank credit is significant. Through this, lending allows the public to carry out investment, distribution, and consumption activities that are always related to the use of money, thus driving the community's economic development. Banks act as an Agent of Development (Susilo, et al, 2000). Considering the culture of the Indonesians, which is very consumptive, lending is one of the alternatives that banks can do to take an active role in economic development.

Several studies showed that lending encourages a country's economic growth. Goldsmith (1969; Mckinnon, 1973; Shaw, 1973) stated that excess funds (surplus funds) channeled efficiently to units experiencing deficits would increase production activities. Furthermore, these activities will increase economic growth. At the micro-level, Gertler &

Gilchrist (1994) proved that obstacles in lending could impact the destruction of small businesses. Safe and productive credit positively impacts banks in terms of, firstly, increasing public confidence in banking, and secondly, maintaining profitability and business continuity.

The results of this study are not the same as the research presented by (Ramadan, 2011), which explains that LDR has a positive effect on Profitability (ROA). The study result (Lall, 2014) shows that credit distribution hurts profitability.

- Effect of Capital Adequacy Level on Profitability with Credit Quality as Moderating Variable
Based on the results of the Data analysis in Table 10, it can be seen that the interaction between Capital Adequacy Level and Credit Quality as measured by CAR*NPL can be seen in Table 10. That has a value *original sample* positive of 0.134 with T-statistic $0.988 < 1.96$ and P-value $0.324 > 0.05$; it can be seen that the interaction between Capital Adequacy Level and Credit Quality as a moderating variable has no significant effect on profitability.

Table 11. Results of Analysis of Types of Moderating Variables

Interaction between Moderator Variables and Variables Predictor (X*Z) There is no interaction	Relationship between Moderator Variables and Variable Criteria $Y = f(x, Z)$	
	There is a relationship (1)	No relationship (2)
	That variable is a variable: Intervening, Exogenous, Antecedent or predictor.	That variable is a variable Homologizer Moderator (Potential Moderation)
There is Interaction	(3) That variable is a variable: Quasi Moderator	(4) That variable is a variable: Pure moderator

Source: Sugiono, 2004

Table 11 explains that credit quality is a Moderator Homologiser model or Moderation Potential, which is a variable that has the potential to be a moderating variable but is not able to influence. Non-Performing Loans indicate that the higher the ratio value, the worse the credit quality, and cannot be moderated. In contrast, allowance for loan losses as part of net interest income is another measure of credit quality, indicating high credit quality by showing low numbers (Ginting, 2017). With a high level of capital adequacy, it tends to minimize lending to customers. Still, with a high level of capital adequacy that is not matched by high credit quality, the company will suffer losses for its problematic credit distribution or many bad credits (Alshatti, 2015).

This study aligns with the research result by (Rengasamy, 2014) which explains that credit quality does not affect profitability. This study is not in line with research (Oino, 2015) which explains that credit quality affects profitability.

- The Effect of Credit Distribution on Profitability with Credit Quality as Moderating Variable
As shown in Table 10, it can be seen that the interaction between Credit Distribution and Credit Quality as measured by LDR*NPL has a value *original sample* positive of 0.030 with T - statistic $0.279 < 1.96$ and P-value $0.781 > 0.05$. The interaction between Credit Distribution and Credit Quality as a moderating variable has no significant effect on profitability. As described in Table 11, the results of this study include the *Homologise Moderator* Model or Potential Moderation, namely variables that have the potential or ability to become moderating variables but are unable to influence or are unable to moderate (Ghosh, 2015).

The more credit disbursed, the greater the profit (Gabriel et al., 2019). However, the higher the credit disbursement, the greater the possibility of bad or non-performing loans. That means that the size of a bank's profit is greatly influenced by the amount of credit disbursed in a period.

In this study, credit quality is considered less capable of moderating credit distribution to profitability and established (Lartey et al., 2013). Management must determine how many credit targets must be disbursed each period. Management must also pay attention to credit quality; this is important because credit quality is related to the risk of congestion (problems) of a loan being disbursed.

The higher the quality of the credit provided, the less the risk of bad credit or non-performing loans. It is known that the more bad debts, the lower the bank's profit. If not in target, the high level of credit disbursement, if not on target, can lead to a greater risk of bad loans, so that it will affect the interest income received (Oladele et al., 2012). This study has been proven by research conducted by (Langodai & Lutfillah, 2019), explaining that credit quality cannot strengthen or weaken the effect of lending on Return On Assets. Research results In line with the results of research conducted (Gabriel et al., 2019).

Theoretical Implication and Managerial Implication

The theoretical implication in this study is that each moderator does not necessarily be a pure moderator, i.e., there can be an interaction between the dependent variable and the moderator variable. The managerial implication is that the desired credit quality will not necessarily increase profitability because many other factors affect the increase in profitability.

Conclusion and Future Direction

Based on this research, the credit quality variable cannot moderate the relationship between capital adequacy and credit distribution to profitability. The role of credit quality in research cannot be a pure moderator but only a Homologizer Moderator. Credit quality only has the potential to be moderate. This means that credit quality in this study only has the potential to be a moderator variable. For further research, it is necessary to try to add other independent variables so that they can be moderated by credit quality

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