Managerial Ability Impact on Lending and Bank Credit Quality: SFA Approach

Fikri Asyrafi*[1], Henny Setyo Lestari[2]

[1,2]*Trisakti University, Jakarta, Indonesia*
[*]*Corresponding email: rafiasyrafi@gmail.com*

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ABSTRACT

The banking sector is one of the vital sectors in connection with its role in distributing funds to the public through lending. This makes many researchers search for variables that affect lending by banks. Still, previous studies have focused more on definitive factors and seem to ignore intangible factors such as bank managerial ability. This study examines the effect of managerial ability and bank-specific factors on bank lending and credit quality. The estimation of managerial ability uses a stochastic frontier analysis approach, while panel regression with fixed effects is used to analyze the research model. This study uses a sample of banks registered on IDX during 2010 – 2021. The results show that managerial ability significantly positively affects lending and bank credit quality. Bank-specific factors such as bank size, workforce, and capital also significantly affect lending and bank credit quality. At the same time, this study did not find the effect of deposit growth on the dependent variable of lending and bank credit quality. The results of this study have implications that banks can expand and improve credit quality by increasing the ability of bank managers

Keywords:
Managerial ability, lending, credit quality, stochastic frontier analysis, bank's specific factor

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1. Introduction

The financial sector especially banking sector is one of the vital sectors deemed as backbone of the country's economy (Bhaskaran et al., 2016; Dikko et al., 2021; Hani et al., 2021; Thai et al., 2021), especially during economic recovery due to the pandemic. The role of banking is vital due its ability to absorb a large number of workers, provide a variety of credit and investment products and provide other financial services to the public (Alam et al., 2021; Orbaningsih et al., 2022). Meanwhile on investment side, the banking sector also occupies the largest capitalization on the Indonesia Stock Exchange, see also (Foggitt et al., 2017; Gallego-Sosa et al., 2021). This shows that banks and its banking system have an important role as the motor of economic growth (Vo, 2018). Moreover, bank also served as capital accumulation agent (Vo et al., 2021). Banks with their function as intermediaries providing public loans, both consumptive and productive. This will shape economic development because it will be transmitted as a contributor to the growth of gross domestic product in terms of consumption, production through exports and imports, as well as as investment, in other words, lending and economic development are indeed interconnected.

The important role held by the banking sector in an economic system makes researchers actively observe the determinants of the bank lending. Observations are performed from external factors such as macroeconomic conditions in a country for example exchange rate conditions, reference interest rates and other monetary policies (Dang & Huynh, 2022), economic policy uncertainty (EPU) factors or the uncertainty of a country in determining policy (Hu & Gong, 2019) to internal factors such as banking liquidity and bank internal risk factors in quantitative easing conditions. (Sclip et al., 2021) which are proven to have their respective effects on bank lending. The previous studies mentioned previously mostly focused on factors that could be measured directly, but focus on fundamental and intangible factors, such as managerial ability which is actually very close to decision making in an organization, have less focus whereas at the end the bank is run by managers in a bank (Inam Bhutta et al., 2021).

The role of managerial ability in shaping the behavior of banks as lenders to the public has been studied less, this is suspected due to the latent nature managerial ability factor that remain hidden and cannot be measured directly (Vo et al., 2021). Several previous researches only used a single proxy like educational characteristics or background of company managers as done by Shen et al. (2021), but it has been criticized for focusing too much on one or a few corporate leaders, thus ignoring the fact that banks are run by multiple managers. A better and more accurate managerial ability assessment approach is needed as developed by Demerjian (2012). Managerial ability proxy with this method uses the residue from the overall bank efficiency regression on the bank-specific characteristics that can be observed (Vo et al., 2021), because the overall efficiency of a bank represents both the bank-specific character that can be quantified and the ability hidden management.

Total bank lending to the public as described previously plays an important role in economic growth, but the quality of the loans provided is also an important thing to be noticed. The banking sector is a large sector but at the same time a fragile sector (Pasaribu & Mindosa, 2021). The impact of not paying attention to the quality of lending or credit quality can be be hazardous like the crisis that occurred in 2008 due to the poor quality of housing loans (Taufik & Soesilo, 2021).

Hypothesis Statement

1. Managerial Ability and Bank Loans

The ability of a good manager is one of the vital determinants of the success of a company, managers with good abilities will be able to better manage and use the resources owned by the company so that the company can produce more products (Vo et al., 2021). Meanwhile, the study conducted by Khattak et al. shows that managers with better abilities are able to provide a competitive advantage resulting in better financial performance as well.

Previous study found that there is a positive relationship between liquidity and lending behavior by banks, while managers with better managerial abilities tend to be better at providing or creating liquidity for their companies (Andreou et al., 2016). This makes managers with good abilities who can provide more liquidity to their banks will result in greater lending behavior as well.

H_1 : Manager's Ability Influence Bank Lending

2. Manager Ability and Bank Credit Quality

Banks that have better managerial capabilities have smaller NPL (Non-performing loans) regardless of the time period of the study (during the crisis or not) and regardless of the size of the company (Vo et al., 2021) which shows that this finding is *robust.* The transmission of this manager's ability can be delivered on the credit hearing process , which is a forum to assess the eligibility of customers to get credit facilities by managers and is a forum for managers to channel their managerial abilities such as decision-making ability to influence the overall credit quality of the bank.

Research by Bhutta et al. (Inam Bhutta et al., 2021) documented that better managers' abilities add firm value to the firm because managers with good skills provide intangible resources to the firm. Good managerial ability affects a good company's credit rating as well. This is because managers with good abilities provide the company's performance in the future with minimal deviation, thereby reducing the risk of default risk arising from the company. In case of banks

whose income comes majorly from credit products, the ability of a good manager may mean a more certain income from these credit products.

H_2 : Managerial Ability Affects Bank Credit Quality

3. Bank Size, Number of Employees, Growth of Third-Party Funds and Bank Capital on Bank Loans

Bank size effect on the behavior of bank activities has been widely studied by previous research, ranging from bank size being a predictor in bank performance (Huong et al., 2021) to bank size being a differentiator in the company's *appetite* for risk where banks with larger sizes tend to be more able to manage risk (Hu & Gong, 2019). In other words, bank size has been a tested control variable in many studies including research by Vo et el. (Vo et al., 2021) who found that managerial ability had a consistent effect across several bank size groups.

Research conducted by Vo (Vo et al., 2021) shows a positive relationship between the number of workers and the bank lending . The number of workers is an input in the estimation of bank productivity in providing loans, as one of the company's working capital factors the number of workers has a significant relationship with labor productivity (Andreou et al., 2016). For this reason, the number of employees is expected to be an independent factor influencing bank lending.

Banks as intermediaries rely on deposit from customers as a source of funds, so the growth of third party funds or customer deposit is an important factor in the growth of lending, both in conditions of economic expansion and contraction (Pasaribu & Mindosa, 2021). In conditions of low interest rate monetary policy, banks will rely more on deposits as a source to expand lending, this is in line with the risk-taking channel where banks will withdraw deposits and lower interest rate policies to maintain profits (Brown, 2020).

Growth by a bank is determined by the expansion of lending as a product of that bank. Bank capital as a means of bank liquidity plays an important role because banks will only expand after holding sufficient liquidity, so bank capital has a positive effect on bank lending, especially for large banks (Kim & Sohn, 2017). The growth of lending by banks does not only occur organically, but regulators have a role in controlling lending through capital requirements define as certain capital that must be met by banks when distributing credit to the public, while for banks meeting these capital requirements means a good cushion for expansion credit.

H_3 : Bank Size, Number of Employees, Growth of Third-Party Funds and Bank Capital Affects Bank Loans

4. Bank Size, Number of Employees, Growth of Third-Party Funds and Bank Capital on Bank Credit Quality

The financial sector in general and the banking sector are vital sectors but are also fragile sectors, reflecting on the events of the 2008 financial crisis in the United States and 1998 in Indonesia. During the crisis, one of the main problems was the low quality of credit, this resulted in *defaults* from the debtors.

A large bank size has a positive effect on the quality of credit provided by banks. Banks with large sizes allow for better risk management thus will have a positive effect on the quality of loans provided. Large bank size is negatively related to bad loan, which means that banks with larger sizes have smaller bad loans . This is because banks with larger sizes are able to eliminate information asymmetry compared to smaller ones.

The number of workers has a negative effect on the NPL which is the proxy quality of credit, this means that the number of workers has an effect on reducing the level of bad loans owned by banks (Vo et al., 2021). While bank liquidity which comes from third party funds, has positive influence on credit quality, as growth in deposits provides a cushion for banks to be more selective in providing credit and credit risk management(Dang, 2021).

Credit quality, cost efficiency and bank capital have been investigated by Berger and Young (1997) which resulted in one of the hypotheses, namely the moral hazard hypothesis where banks with low capital will increase the NPL of banks, this hypothesis is proven to be significant with the explanation that banks with low capital tend to be more dare to take low credit quality. Meanwhile, contradictory research results found that bank capital has a negative effect on credit quality because the excess capital makes banks more lax in implementing their credit policies, thus the relationship direction of the relationship between these two variables is still ambiguous .

H_4 : Bank Size, Number of Employees, Growth of Third-Party Funds and Bank Capital Affect Bank Credit Quality

Therefore, the relationship between the previously described variables can be described as follows:

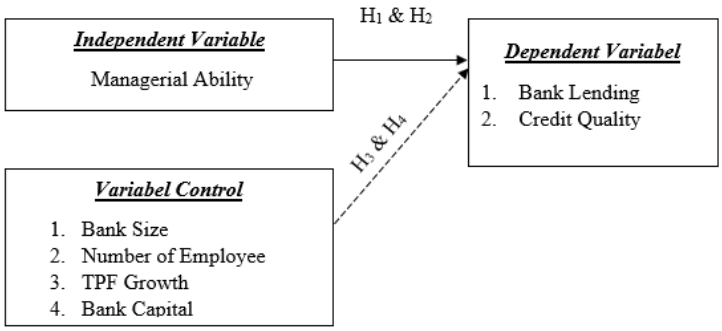

Figure 1 : Research Framework

Based on the explanation above, this study aims to analyze the latent factor in the efficiency of a bank, namely the bank's managerial ability which can explain bank lending activities and quality of the lending . This study will also examine the relationship between control variables such as bank size, number of workers, deposit growth and bank capital to dependent variable bank lending which have been studied have an influence on and their effect on loan quality.

2. Method

This research uses purposive sampling considering the reseaach is to focus on certain goals . The sample in this study includes 28 bank companies listed on Indonesia Stock Exchange. The research period was conducted on the company for 11 years (period 2010 – 2021). Data collection methods are sourced from external data provided by data providers such as Eikon Reuters, annual reports and company financial reports.

Statistical analysis used in this study was parametric analysis with multiple panl data regression. Multiple regression with panel data is done with fixed effect according to the results of the Chow test and Hausmann test. Simultaneous test or F test is used to determine whether the panel data regression model used is appropriate to explain the effect of the independent variables simultaneously on the dependent variable using a certain significance level. While the T test is used to determine the effect of each independent variable on the dependent variable.

The dependent variable of bank lending is proxied by the total loan from the bank as measured by the natural logarithm of the *total bank loan* (BALO). Meanwhile, loan quality (LOQU) will be proxied by the ratio of non-performing loans to total loans. The independent variable of this research is managerial ability which is proxied by the residual of the actual efficiency score and the estimated efficiency. The Efficiency Score (SKEF) was formed following the research conducted by Vo et al. (Vo et al., 2021) where the efficiency score is obtained through a stochastic frontier analysis approach with a cost translog function to estimate cost efficiency in banking through specifications according to Sun & Chang (2011) as follows:

$$\ln TC_{it} = \alpha_0 + \sum_{n=1}^{3} \alpha_n . \ln p_{nit} + \frac{1}{2} \sum_{n=1}^{3} \sum_{m=1}^{3} \beta_{nm} . \ln p_{nit} . \ln p_{mit} + \sum_{n=1}^{3} \delta_n . \ln y_{nit} + \frac{1}{2} \sum_{n=1}^{3} \sum_{m=1}^{3} \delta_{nm} . \ln y_{nit} . \ln y_{mit} + \sum_{n=1}^{3} \sum_{m=1}^{3} \lambda_{nm} . \ln y_{nit} . \ln y_{mit} + \varepsilon_{it}$$

Where is the denotation

$\ln TC_{it}$= natural logarithm of the total cost of the i-th bank in year t, where the total cost is the total interest expense and non-interest expense

p_{nit} = nth input category used by the i-th bank in year t
y_{nit} = the nth output category used by the i-th bank in year t
$\alpha, \beta, \delta, \lambda$ = coefficient to be estimated
ε_{it} = error terms

The general specifications above are estimated with certain inputs and outputs with four inputs in the form of : (1) the cost of funds is calculated from the ratio of interest expense from third party funds to total third party funds (2) labor costs are calculated from the ratio of salary costs to the number of employees (3) cost of depreciation of fixed assets for the year to total PPE (4) finance costs of interest ratio of loans to total debt. Meanwhile, the outputs are: (1) total credit (2) non-credit financial assets. Using the Stata 16 software, an efficiency score (SKEF) will be generated for the above specifications.

Furthermore, the efficiency score is regressed along with bank-specific variables, namely bank size (UKBA), age (UMBA), number of workers (TEKE), and provision (PROV) to obtain the residual between the actual and predicted efficiency scores which is a proxy for managerial ability (KEMA) with the following regression equation:

$$SKEF_{it} = \gamma_0 + \gamma_1 . UKBA_{it} + \gamma_2 . UMBA_{it} + \gamma_3 . TEKE_{it} + \gamma_4 . PROV_{it} + \varepsilon_{it} \quad (4)$$

Where $KEMA = \varepsilon_{it}$

Variable control in this study was measured by the natural logarithm of total assets (UKBA) for the bank size variable, the natural logarithm of the number of workers (TEKE) for the workforce, the deposit growth variable as measured by the growth of third-party funds from year to year (PEDE), and the bank's capital ratio (MOBA) as measured by the equity ratio.

3. Results

Table 1. Descriptive Statistical Analysis Results

Variable	Obs	Mean	Max	Min	Std. Deviation
Price of Fund	364	0.0472	0.1161	0.0030	0.0184
Price of Labor	364	208.2631	630.2485	-	118.8129
Price of Physical Capital	364	0.0600	0.2350	-	0.0400
Financial Capital	364	18.0606	4,496,2480	-	257.7485
Total loan	364	128,000,000	1,050,000,000	612,751	214,000,000
Non-Loan Asset	364	33,900,000	475,000,000	69.991	67,900,000
Total Cost	364	11,100,000	118,000,000	115.472	17,400,000
SKEF	364	0.2658	0.9143	0.0001	0.0660
KEMA	364	0.0897	0.3077	0.0002	0.0660
UKBA	364	17.8057	21.2689	14.1701	1.7558
UMB	364	41.2143	109,0000	11.00000	20.1601
TEKE	364	8.3879	11.2822	5.4337	1.5269
PEDE	364	0.1437	3.5931	- 0.5081	0.2841
PROV	364	0.0198	0.1919	0.0003	0.0207
MOBA	364	0.1352	0.4744	- 0.0328	0.0492
BALO	364	17.3433	20.7721	13.3257	1.7853
LOQU	364	0.3693	0.5096	-	0.0519

Source: Stata 16 Output

KEMA has an average value of 0.0897 and a standard deviation of 0.066 0. The minimum value is 0.0002 by BEKS (BPD Banten) and the maximum value is 0.3076

by BBRI (Bank Rakyat Indonesia). Meanwhile, BALO has an average value of 17.3433 and a standard deviation of 1.7852. The minimum value is 13.3257 owned by BEKS (BPD Banten) and the maximum value of 20.7720 is owned by BMRI (Bank Mandiri). Furthermore, LOQU has an average value of 0.0369 and a standard deviation of 0.0519. The minimum value of 0 is owned by BKSW (Bank QNB Indonesia Tbk.) and the maximum value of 0.5096 is owned by BEKS (BPD Banten).

The results of the F (simultaneous) test show the value of the probability (F-statistics) for both models is 0.0000 where this probability value is below the significance value of 5% (0.0000 <0.05). It can be concluded that the results of the F test (simultaneously) reject Ho, meaning that there is a simultaneous significant effect between the independent variables on the dependent variable. Meanwhile, the coefficient of determination (R2) used to measure how well the regression line matches the actual data (*goodness of fit*) from each model 1 and 2 is 97.51% and 2.20%.

Table 2. Regression Result

	BALO (1)	LOQU (2)
C	0.115***	52.309***
	(0.00)	(11.28)
KEMA	0.002***	-37.339**
	(0.00)	(6.97)
UKBA	-0.004***	-1.371***
	(0.00)	(0.29)
TEKE	0.449***	-3.881***
	(0.01)	(0.76)
PEDE	0 000	-0.037
	(0.00)	(0.17)
MOBA	0.004***	6.567***
	(0.00)	(1.34)
R-Squared	0.975	0.022
Obs	336	336

Source: Stata 16 Output

Standard Deviation is in the sign "( )"***,** Indicates the level of significance at the level of 1% and 5%

4. Discussion

a. Managerial Ability and Bank Loans

Table 2 shows the regression results from model 1 which analyzes the relationship between the independent variable KEMA or managerial ability to the dependent variabel, namely BALO or lending by banks with results indicating that there is a significant positive effect between the two variables. This is in line with research conducted by Vo et al. (Vo et al., 2021) which explains that managerial ability is the difference between efficient and less efficient companies where the managerial ability of managers who run the company will maximize the use of resources from the company to be converted into output in this case the output is in the form of lending by banks. This more efficient resource management can occur because more capable managers can bring an intangible value into the company (Inam Bhutta et al., 2021) so that the bank's value will be better with the increase in lending which is a bank product.

Banks that are intermediaries need liquidity at relatively low prices in order to be able to be more flexible in distributing credit, more capable managerial capabilities can generate liquidity per company asset as well as being able to take risks better (Andreou et al., 2016). This has led to higher lending by banks to the public in total.

b. Manager Ability and Bank Credit Quality

The results of multiple regression in table 2 show that there is a significant relationship between the ability of managers and bank NPL, good managerial ability can reduce the bank's NPL level or in other words improve the credit quality of the bank.

The results of this study are in line with the research by Vo et al. (Vo et al., 2021). The more capable managers makes banks able to manage risk better in their companies so that they are able to produce higher quality credit as research conducted by Yung & Chen (2018) which found that managers with high abilities will be more receptive to risk while managers with low abilities are more averse risk.

The more capable managers produce certainty in receiving income. NPL which is a measure of the percentage on how many creditors will provide bank income, prove that managerial ability provides certainty of bank income in the future. Furthermore, it means reducing the level of credit risk of the company and increasing the rating of the company itself (Bonsall et al., 2017)

c. Bank Size, Number of Employees, Growth of Third-Party Funds and Bank Capital on Bank Loans

The results of the study in table 2 show that the size of the bank, the number of employees and the bank's capital have a significant positive effect with the dependent variable, namely bank lending with a probability of 0.00. This happens because banks with a larger size can take and are able to manage greater risks (Hu & Gong, 2019), with greater risk management capabilities banks have more capacity in providing loans to their debtors. The results of this study are in line with the results of research conducted by Vo et el. (Vo et al., 2021).

Workers are one of the inputs of conventional production factors that are used in estimating company efficiency (Sun & Chang, 2011) an increase in factors of production will increase the output of the company. This is in line with the results of the T test for this variable which shows a significant positive effect between the number of workers proxied by the natural logarithm of the number of permanent workers on the bank's output, namely bank lending in align with the results of previous research by Vo et al. (Vo et al., 2021)and Anderou et al (Andreou et al., 2016).

Bank capital is the main liquidity thus that the increase in bank capital will cause banks to expand (Kim & Sohn, 2017). In addition, from a regulatory perspective, increasing bank capital is one of the prerequisites for banks to expand lending, while for banks, apart from being the main source of funding , adequate bank capital is also a good cushion.

The results of the study in table 2 show that there is no influence between the independent variables of deposit growth on bank lending, this is not in accordance with the results of research by Vo et al. (2021) on full sample and small-sized banks , but these results are consistent with those studies on medium-sized banks. This shows that the relationship between deposit growth and bank lending has not been consistent because it is still affected by different sample sizes of banks. On the other hand, bank lending in Indonesia is also restricted or limited by the bank's core capital with a minimum capital requirement for lending to the public.

d. Bank Size, Number of Employees, Growth of Third-Party Funds and Bank Capital on Credit Quality

The results of the analysis in table 2 show that bank size and number of employees have a significant negative relationship to non-performing loans from banks which are a proxy for bank credit quality or have a significant positive relationship to bank credit quality which is in line with previous research by Vo et al (2021) . Meanwhile, bank capital shows a significant positive relationship and deposit growth has not shown any significance to the dependent variable.

Banks with larger sizes have more capacity thus enable them absorb low credit quality. Banks with a larger size are also possible to regulate banks better which will affect the quality of the loans provided by banks (Tahir et al., 2020) . Meanwhile, a higher workforce allows banks to choose the best quality of workforce in the implementation of credit product management thus produce loans with lower NPLs or higher credit quality, in addition to having more workforce it is possible to establish internal audits or other supervisory divisions as a form of control in order to produce higher quality credit products (Wahyuni & Adiandari, 2019) .

Bank capital has a significant positive effect on NPL or means it is negatively related to credit quality. This is contrary to the results of research by Vo et al. (Vo et al., 2021) which shows that bank capital has a negative effect on credit quality. The influence of bank capital on the quality of credit provided by banks has been widely studied before, but the relationship between

the two is still ambiguous due to different findings between studies. Large bank capital tends to make banks more flexible in distributing credit and loosening provisions in lending (Poetry & Sanrego, 2011) so that an increase in capital will increase the NPL of the bank. On the other hand, the "moral hazard" theory states that banks with small capital try to increase or expand by increasing lending so that they ignore the quality of the credit(Belaid, 2014). However, in banking practice in Indonesia, banks credit expansion are regulated with limitations or prerequisites to meet the capital level or the so-called CAR (capital adequacy ratio) fulfillment regulations so that banks with small capital cannot expand even though they loosen their credit quality means the moral hazard theory is cannot be applied in Indonesia.

There is no significant effect of deposit growth on credit quality because the probability value of the T test > 10% is 0.82 but the relationship shows a negative relationship which is in line with the results of research by Vo et al. (2021) . This negative relationship indicates that an increase in deposits improves credit quality because deposits are a source of funds from banks so that an increase in their sources of funds makes banks more flexible to manage the risk of disbursement of funds or their credit quality.

5. Conclusion

Based on the results of research that has been conducted to analyze the effect of managerial ability and other variables in the form of bank size, workforce, deposit growth and bank capital on bank lending and credit quality, it was found that managerial ability proved to be significantly positive on the dependent variable of lending as well as credit quality from banks. This shows that banks can improve the ability of managers, especially in making decisions in the allocation of resources and increasing risk management capabilities as an effort to increase the number of lending and reduce NPLs from banks. The ability of managers for banks is an *intangible asset* for companies to place banks in a stronger position because they are able to better distribute the number and quality of company products and to achieve the goal of all companies, namely maximizing company value. In addition, this study supports previous research which states that there is a significant relationship between the company's total assets, labor and bank capital on the amount of bank lending and bank credit quality

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