Determinant of Loan Supply Behavior: The case of Regional Development Banks in East Indonesia

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This study is intended to assist the Regional Development Banks in Eastern Indonesia to increase their loan volume. The collected time series data in the period of 2011 - 2016 was analyzed using a multiple regression analysis with the use of SPSS version 23 of the software package. The statistical results of the t-individual test indicate that personnel cost, GRDP, promotional cost and deposit funds affect positively and significantly loan volume. The overall F-test of the four studied variables also indicates a positive and significant result.

Key Words: Loan Volume, RDB, Personnel Cost, Promotion Cost, Deposit Funds, GRDP.

This is a research in Management

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The study is intended to assist to increase the intermediary function of the regional development banks operated in the east Indonesia by expanding more credit portfolio. As it has been known in many kinds of literature (e.g. Macerinskine & Laura, 2008 and Hanweck & Ryu, 2005) that loan is the highest promising earnings for banks compared with other investment portfolios. With such high prospect of return, bank including regional development banks should prefer to invest the collected funds to its loan portfolios.

Apart from a possible high return earned from loan portfolios, banks are also required to disburse loans in performing their intermediary functions. Funds collected from third parties are required to be re-channeled in various forms of loan portfolios. As a measure of the performance of the intermediary function, Central Bank of Indonesia implements a Loan To Deposit Ratio (LDR) which is subsequently replaced by Loan to Funding Ratio (LFR) for commercial banks (Wahyuningsih & Swandari, 2016 and Quadrant & Suriani, 2017 and Wahyuningsih, Oemar, Supriyanto, 2017) and Financing Deposit Ratio for Sharia Banks and Sharia Unit (Agustina, Djaelani & Priyono, 2017). Currently, the minimum limit required for commercial banks for the achievement of LFR ratio is 78% and the maximum limit is 92% (e.g. Berhardin, 2016).

In relation to the existing literature, there is an extensive of literature studying loan supply behavior of commercial banks from various countries, such as in Jordanian (Elletter & Yaseen, 2017), in China (Chi & Li, 2017) in Kenya (Njeru, Mohhamed & Wachira, 2017), in India (Ramcharran, 2017) and in Croatia (Škalamera-Alilović & Štambuk, 2017). In Indonesia, researchers related to individual bank and bank level are also frequently conducted primarily instated and private commercial banks. It is also valid for Regional Development Banks (e.g. Liem, Masjud, Candra, 2017 and Riyadi, 2017). A few scholars also studied whole commercial banks (Anwar, 2017 and Rokhim & Marmidy, 2017). Nevertheless, most loan supply studies focus on financial ratios such as profitability ratios, profitability ratios, and other ratios (Liem, Masjud, Candra, 2017 Wibowo & Syaichu, 2013; and Raharjoet al, 2014).

Different from other scholars, this study does not focus on the aspect of financial ratios. In relation to credit, this study attempts to relate the amount of personnel cost, advertising and promotional cost, and the collected deposit funds and GRDP variables to loan volume. The first two mentioned variables, to the best of our knowledge, do not ever take into account by scholars. In fact, these two variables can possibly influence credit performance. This is quite rational because promotional costs will improve the image of the bank that can make customers to apply for credits (Škalamera-Alilović & Štambuk, 2017; Black & Strahan, 2002; and Carter et al., 2007). This is also true for the variable of personnel cost that can be associated with motivation factors. Employee costs, one of which is salary, will most likely have implications for the employee's willingness to take more loan supply decision which then possibly could increase loan volume (e.g Almossawi, 2001; Almazan & Suarez, 2003; and Lepitit et al, 2008).

If it is related to measurement, it is generally credits measured by LDR or FDR ratio (Rosengard & Prasetyantoko, 2011; Pelealu, Karamoy, Poputra, 2017, Wahyuningsih & Swandari, 2016 and Quadrant & Suriani, 2017 and Wahyuningsih, Oemar, Supriyanto, 2017). Only a small number of researchers does use the credit volume to measure credit performance (e.g Satria & Subegti, 2010; Sukarno & Syaichu, 2006; and Triasdini & Arfianto, 2010; Anindita & Arfianto, 2011).

Another feature of this research is in geographical coverage. Generally, research on regional banks is only at the individual bank level, such as Sulselbar Bank, Jambi Bank and so on. Many researchers study the local banks by taking almost all of the samples of local banks operated within Indonesia. In contrast to other studies, this area of research is only in the geographic area of eastern Indonesia. Thus, the possible biases resulting from fundamental differences such as the concentration of economic activity and the velocity of funds will be avoided. In addition, the assumption of differences in economic characteristics between provinces in Eastern Indonesia is not too obvious. In other words, it can be assumed that the bank tends to have the same pattern and behavior in making loan supply decision.

Based on the above explanation, this study examines how advertising and promotional costs, labor costs, deposit funds, GRDP affect loan volume.

Loan Disbursement

As a financial institution, banks are required to perform the intermediation function. Banks are given the authority to collect funds from societies in the form of various loan products (demand deposits, savings deposits, time deposits) (Taswan, 2010; Riyadi, 2006; and Rivai & Veithzal, 2007). The collected funds have then to be redistributed in the form of the loan portfolio (Taswan, 2010 and Rivai & Veithzal, 2007). Banks are bounded by that role and supervised and controlled by Bank Central Indonesia and the Financial Services Authority for the achievement.
Related to the funds channeling, banks have decisional options in their investment portfolio (Riyadi, 2006), including to place funds collected into primary reserves, secondary reserves, fixed assets, or loan portfolios. Certainly, every decision made affects other investment opportunities. When it comes to placing funds into other banks, it can affect other investment options, including allocation of loan volume (Riyadi, 2006; and Gupta and Jain, 2004).

Allocation of the collected funds into loan portfolios compared to other investment options could provide a positive impact for the bank. One of the most likely benefits is to earn interest income. Interest income has the highest promising return than other investment portfolios. Viewed from a risk perspective, banks are considered to have a better information of their customers than other institutions, including information related to credit customers. Before making loan decision whether to reject or accept loan application, banks are required to evaluate the creditworthiness of the applicant on the basis of prudential principles, as recommended by Central Bank of Indonesia. One of those is to assess creditworthiness using five 5C standard evaluation.

In addition, the ease of obtaining low-cost funds allows banks to overcome barriers that could occur in making a loan decision. The main source of bank funds comes from deposit saving collected from societies. Not all financial institutions are allowed to collect funds directly from societies, except banks. For example, other institutions such as insurance collected funds by offer insurance products. More, lately, it is getting an increase of trust from societies to banks since the cases of investment frauds becomes increase so that some people feel more comfortable and secure when placed their funds in the bank than other institutions. This the make banks become a priority for savings compared with other institutions. This then makes banks can possibly collect low-cost funds more than ever before.

This is also amplified by the ease of obtaining funding sources from other banks and Central Bank of Indonesia in form of loans. Under certain conditions, including when

decided to expand more credit, banks can use loan funds obtained from other banks. This existing of trust level provides benefits not only for liquidity sources but also a cheap loan interest offered from other banks.

Apart from the above-given discussion, there are several measurements of loan performance noted by literature. One of the highest frequency of measurement ever use by scholars is Loan to Deposit Ratio called LDR(Taswan, 2010; Hemple and Simonson, 1999; Singkey, 1998; and Gupta and Jain, 2004). This is related to the ratio of the amount of loan disbursed by a bank divided by amounts of saving deposits collected by that particular bank. Recently, Central Bank of Indonesia issued a new measurement indicator called Loan to Funding Ratio. To put shorten the sentence, it is FDR. This is the ratio between the amount of loan distributed to societies against a number of saving deposits collected plus the issuance of securities undertaken by a particular bank for the purpose of obtaining funds.

In addition, credit performance can also be seen from the number of credit customers. In recent years, the format of bank financial statements is required to display the number of bank credit customers within a period of one year. In addition to the number of customers, credit performance can also be measured by a number of credit disbursements (Cziraky et al., 2005; Greenawalt and Sinkey, 1988).

This study uses a number of loans that have been allocated by a bank. This information can be obtained easily obtained from annual reports published by a bank. Therefore, the definition of credit volume used in this study refers to a number of loans that have been disbursed by a regional development bank within a particular period of one year.

Personnel Cost

Personnel cost incurred by bank consists of several components and each bank could possibly to have different items. For example, Bank Sulsebar measures personnel costs as wage and salary costs, job allowance cost, incentives, and education and training cost (Annual Report, 2016). Slightly different, the Bank of Papua uses both fixed and non-permanent wages, labor contribution cost, other wages, bonuses and incentives (Annual Report Bank Papua, 2016). More broadly, the Bank of West Nusa Tenggara (NTB) uses indicators in the form of production service cost, allowance cost, salary and wage cost, labor benefits, medication cost, leave over cost, and others. In this study, personnel cost is the sum of each of the costs incurred in the labor cost items presented in the end part of the annual report.

One factor that is very likely to have implications on loan volume is personnel cost. This assumption is valid because researchers found that there is a strong relationship between salary and/or wage paid by a company and employee productivities (Riley, 2005; and Benvenuti, et al, 2017). Related to bank case, high salaries reflected in personnel cost will certainly have a positive impact on the employee motivation (Delery, & Doty, 1996; and Hermalin, & Wallace, 2001). That motivation can impulse an effort to achieve the target of credit disbursement imposed to employees (Inderst, 2007 and Baker, 2000.). Of course, that is not just in the level of loan officers, salary could drive all employees to perform well (Agarwal and Wang, 2009). Those assigned on loan application appraisal may perform a time-efficient for the assessment made due to salary implication (Berg et al, 2012 and Godquin, 2004). It is also true for managers (Fahlenbrach & Stulz, 2011). They will certainly

actively motivate the employees to achieve the target stipulated, including the amount of loan distributed in the range of a particular time.

H1: Amount of personnel cost affects positively and significantly loan volume.

Advertising and Promotional Cost

Advertising and promotion are one of the marketing efforts towards products and services offered. Certainly, these efforts are always associated with costs. With respect to a bank, the more efforts allocated for marketing activities, the greater the costs will be spent. Rationally, an institution will spend more cost on advertising and promotion when it is believed that the cost spent will drive an increase on, one of them, the demand for loans (Black & Strahan, 2002).

In this study, advertising and the promotional cost is a number of funds spent by a bank in an effort to improve the image of the bank, which then could affect, one of them, loan demand or numbers of loan application. This will possibly affect amount of loan distributed by that bank (Škalamera-Alilović & Štambuk, 2017 and Carter et al., 2007)

The relationship between advertising and promotional cost with loan volume can be described simply (Škalamera-Alilović & Štambuk, 2017; Black & Strahan, 2002; and Carter et al., 2007). It is the fact that there are still many people who do not understand the procedures of the loan application in the bank, and these people are commonly reluctant to make a contact with the bank. Such people will possibly apply for a loan from others such as cooperatives or apply for a loan from a moneylender. Consequently, they are required to pay a very high loan interest. This proves that promotional efforts may increase the likelihood of potential customers applying for loans.

Another aspect is that many banks provide a very wide coverage of a geographical operation assigned to a loan officer so that this makes some areas unexplored maximally. Through marketing efforts is likely to encourage people who are in a relatively remote location to obtain adequate information so that they will be able to apply for a cheap loan.

H2: Amount of advertising and promotional cost affects positively and significantly loan volume

Deposit Funds

Third party funds are one of the largest sources of bank funds (Gupta et al., 2004 and Liu & Wray, 2010). In fact, third-party funds are considered cheaper compared with obtaining a loan from others. From the existing literature, the source of funds from third parties is demand deposits, saving deposits, and time deposits (Gupta et al., 2004;). A demand deposit is a deposit from third parties to a bank whose withdrawal may be made at any time by check, other payment order or by way of transfer of the book. Thus, demand deposits are the shortest funding source as it is very easy to be transferred anytime (Kasmir, 2008; Rivai and Veithzal, 2007; and Riyadi, 2007)

Aside from demand deposits, saving deposit is also the most common source of bank funds used to buffer lending activities (Darvas, 2013). Saving deposits are deposits from third parties to banks whose withdrawals may only be made under certain conditions. Saving deposit include a deposit on call, guarantee deposit, bonds, call money, interbank loans, receipt of funds from abroad and receipt of foreign currency funds (Kasmir, 2008; Rivai and Veithzal, 2007; and Riyadi, 2007). Other third-party funds are time deposits. This represents deposits from third parties to banks withdrawal may only be made within a certain period of time under an agreement between a third party and the bank concerned.

These deposits are the main source of funds for banks compared to other sources of funding. In various literature, it is said that this is a major buffer for lending (Kasmir, 2008; Rivai and Veithzal, 2007; and Riyadi, 2007). If the bank's third-party funds are low, then the bank will be forced to apply for another source of funds which could be more expensive than the deposit. When applying an extensive lending policy, it is usually followed by efforts to increase the number of deposits collected from societies (Shollapur and Baligatti, 2010 and Sudirman, 2003). Conversely, in the conditions that bank implement tightening lending strategies, the bank is more inclined reduce fund the collection from third-party (Darvas, 2013).

H3. Amount of saving deposits affects positively and significantly loan volume

Economic Condition

Economic condition is also one of the strongest external indicators that could affect loan supply decision(s). For this discussion, the study uses Gross Domestic Product (GDP) to describe the economic condition. Several studies employ economic condition as measure using various indicators such as inflation, interest and exchange rate, the balance of payment, and many others (Burton et al, 2001), which generally provide broad measurements. This study focuses a certain region in Indonesia; hence, GRDP is considered the most appropriate measurement to reflect the regional economic condition (Burton et al., 2003). we narrow down economic condition into the regional economic condition and define it as the degree of regional economic outlook in a certain area of a city or regency within a specific period of time.

Movements in GRDP are major determinants of shifts in demand for funds. When GDP rises, for example, there will be an increase in demand for loans from firms and household because GDP has improved the business outlook and household income (Burton et al., 2003) and likewise stimulates banks to provide more loans (Dell'Ariccia and Marquez, 2003; Eickmeier et al., 2008; and Blanchard, 2003) as they believe that borrowers become prospects, more willing to borrow and have the capability to borrow. on the other hand, when downturn economy occurred as indicated by decrease in GDP, the demand for funds decrease, and banks also have a tendency to face some external and internal obstacles, such as liquidity problems (Woodford, 2010), default rate (Keeton, 1999), tight regulation from central bank (Du and Kuttner, 2010; and Burton et al., 2003), and adverse selection problems (Gavin and Hausman, 1998; and Lowe and Rohling, 1992). Hence, banks' liability account could decline during the economic downturn, which in turn decreases loan supply decisions. Meaning that when the economy faces a downturn, there is the probability

that loan volume will be low, and vice versa (Peek et al., 2003; and Gavin and Hausman, 1998)**.**

H4: Output of Gross Regional Domestic Product affects positively and significantly loan volume

Methodology

a. Sample, Data, and Procedures

This study takes samples from 8 Regional Development Banks (RDBs) operating in Eastern Indonesia. These banks are Bank Sulselbar, Bank SulutGo, Bank Sulteng, Sultra Bank, Bank NTB, Bank NTT, Bank Maluku and Bank Papua. The data obtained for the research are taken from Annual Report of Bank RDBs and Indonesian Statistical Agency within the duration in between 2011 and 2016. Data from Annual Report of the Banks are loan volume, personnel operational cost, advertising, and promotional cost, total third-party funds. While GRDP output was taken from 12 provinces using Statistical Agency Data.

Table 1 : Descriptive Statistics for Main Variables

Main Variable	Minimum	Maximum	Mean	Std. Deviation
Loan_volume	491,997	7,882,680.00	3,756,665.49	2,009,839.07
Promotional Cost	761	26,653.00	9,501.57	7,183.43
Personnel Cost	26,610	477,898.00	182,840.20	1,077,188,694.00
GRDP	34,408	11,443,268.00	3,749,665.98	2,677,684.87
Deposit Funds	33,411	333,343.00	96,769.71	60,403.68

b. Method of Data Analysis

The study uses multivariate regression analysis. Beforehand, the data are tested to detect outlier and multicollinearity. Also, the study conduct normality test using the P-P plot. It was an outlier detection conducted firstly to avoid misreporting which could influence the regression line. To do so, the study uses Z score by applying SPPS version 23. On the basis of the statistical results, the study identifies three outlier scores, that are no 1 and 2 with respect to GRDP data, and 6 for personnel cost. When using z-score for outlier detection, the outlier data are lied out of z-score. The z-score lies in between negative 2.5 and positive 2.5 (Rousseeuw & Hubert, (2017). These data are then dropped in the analysis as suggested by Orr et al, (1991).

Tabel 2 : Z-score value for the sample

| Zscore Value	Minimum	Maximum
Zscore (Loan Volume)	-1.62434	1.91664
Zscore (Promotional Cost)	-1.21677	2.10131
Zscore (Personnel Cost)	-1.45035	2.54185
Zscore (GRDP)	-1.38749	3.19265
Zscore (Deposit Funds)	-1.04892	2.33473

To avoid bias in the coefficient estimates and to specify the correct model in the given equation result, the study proposes to detect multicollinearity. With the use of Variance Inflation Factor (VIF) and tolerance, the results indicate that the lowest tolerance score is 0.201 and the highest VIF score is 3.19265. Widarono (2010) explains if using VIF and tolerance method, score tolerance is not to 0 and VIF score less than 10 means that there is no multicollinearity. On the basis of the given result, it can, therefore, be said that there is no multicollinearity.

Table 3: Multicollinearity Test

Main Variable	Collinearity Statistics	
	Tolerance	VIF
Promotional Cost	0.296	3.381
Personnel Cost	0.201	4.982
GRDP	0.333	2.999
Deposit Funds	0.675	1.482

Scholars noted that normal distribution is not needed when data have large samples (> 30 or 40) since the sampling distribution tend to be normal (Ghasemi & Zahediasi, 2012; and Pallant, 2007). However, to ensure the data are normally distributed for the validity purpose, the study conduct normality test using the P-P plot. This is one of reliable normality distribution test counting on visual judgment (Ghasemi & Zahediasl, 2012 and Altman & Bland, 1995). From the test result using Probability Probability plot or called P-P plot of Standardized Residual regression, it can be seen that data can follow the existing diagonal line. Therefore, it can be concluded that this research data is normal.

Figure 1: Normality Distribution Test Using P-P Plot
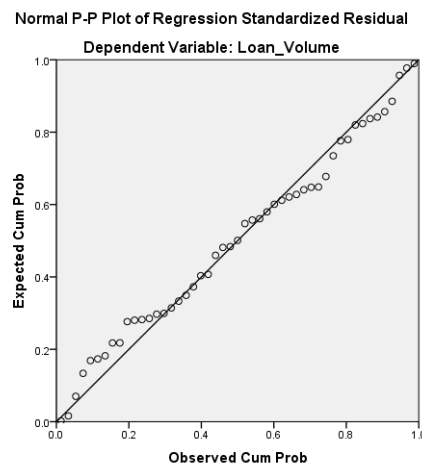
Data Result and Analysis

On the basis of multivariate regression analysis given in the table 4, the regression equation is then formulated as Y = 561453 + 69,939X1 + 6,115X2 + 0,240X3 + 5,098X4 + e. The result indicates that loan volume is predicted positively by four independent variables with a significant score of 0.00. The four independent variables are the promotional cost (X1), personnel cost (X2), deposit funds (X3), and GRDP (X4).

Table 4: Statistical Results Using Multivariate Regression Analysis (F-test).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	131379873161545.980	4	32844968290386.496	54.705	.000[b]
	Residual	24616540856188.918	41	600403435516.803		
	Total	155996414017734.900	45			
a. Dependent Variable: Loan_Volume						
b. Predictors: (Constant), GRDP, Promotion, Deposit_Funds, Personnel_Cost						

Table header: ANOVA

The determination coefficient parameter as given in table 5 is 0.827 or 82,7%. This means that the four predictors variable explain 82,7% of the variance and 17,3% of the variance cannot be explained the studied variable. It also can be said that variation of the total loan volume can be explained by variation of promotional cost (X1), personnel cost (X2), Deposit Funds (X3), and GRDP (X4) as much as is 0.842 or 84,2%, the rest 0.158 or 15.8% is explained by other variables. With the use of adjusted R square, it is as much as 0.827 or 82.7%.

Table 5: Statistical Results of the Determination Coefficient

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.918[a]	.842	.827	774857.042
a. Predictors: (Constant), GRDP, Promotion, Deposit_Funds, Personnel_Cost				

Table header: Model Summary

The partial influence of each variable is examined using t-value. Statistical t-test indicates that there are three variables show a significant result of less than 0.05 and one predicted variable show insignificant value. Those three variables are the promotional cost (0.024), personnel cost (0.026), and deposit funds (0.003). Another predicted variable of GRDP show insignificant score of 0,114 (0.114 > 0.05).

The coefficient score of the variable promotional cost is 69.939. This means that when a bank expenditure of promotional cost increase 1 unit (1 million rupiah), the total loan volume will increase to 69,939 rupiah. The coefficient parameter of the personnel cost is 6.115 with assumption other variables unchanged. It means that when the cost of personnel is increased by 1 unit (1 million), the total volume of the loan will increase to 6.115 million rupiah with assumption other variables unchanged. With regard to deposit funds, the coefficient parameter is 0.240. This indicates that when deposit funds increase 1 unit (million), then the total volume of the loan will increase to 0.240 million rupiah with assumption other variables unchanged. To GRDP, its coefficient score is 5.098. This means that when the output of GRDP increase to 1 unit (1 billion rupiah), the total volume of the loan will increase to 5.098 million rupiah with assumption other variables unchanged.

Viewed from its individual contribution of each variable, standardized coefficient (beta) shows that deposit funds (0.338) have a higher impact to the total volume of

the loan, then followed by personnel cost (0.319), promotional cost (0.267), and GRDP (0.122).

Table 6: Statistical Results Using Multivariate Regression Analysis (t-test).

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	561453.027	291443.991		1.926	.061
	Promotional_cost	69.939	29.920	.267	2.338	.024
	Personnel_Cost	6.115	2.655	.319	2.303	.026
	Deposit _Funds	.240	.076	.338	3.149	.003
	GRDP	5.098	3.160	.122	1.614	.114
a. Dependent Variable: Loan_Volume						

Discussion and Implication

Given the result in table 4, it can be explained that an increased expenditure in promotional costs will cause an increase in the amount of loan volume granted. This is in line with findings by some researchers (Škalamera-Alilović & Štambuk, 2017 and Carter et al., 2007; and Tankha, 2002). This implies that when a bank implements loan expansion strategy, then it will be effective if it is followed by an increased expenditure on promotional costs since the costs could predict an increasing amount of loan volume distributed. Conversely, it could be that bank may do not eager to spent much of promotional cost when, one of them, it does apply a tight lending policy.

This is also valid for the cost of personnel in which an increased expenditure on promotional costs could increase loan volume. This finding is consistent with Berg et al, (2012), Riley, (2005), Benvenuti et al, (2017), Inderst, (2007), and Agawal and Wang, 2009). It can be explained that an increase in personnel cost can drive up efforts to make more credit decisions, in particular, to loan officers. In other words, an increase in wage could make loan officer of the bank to achieve more credit realization against the target set. However, some studies found a negative relationship to the quality of credit disbursed. The increase in loan volume could cause more bad credit decision made by loan officers (Agarwal et al, 2014 and Banerjee et al. (2009).

Deposit funds also have an impact on the increase in the amount of loan volume. This has been corroborated by the findings of researchers in various countries, such as in India (Shollapur and Baligatti, 2010), in Japan (Ogawa & Kitasaka, 2000), and in Indonesia (Sudirman, 2003). This is true because deposits are the main funds used to support lending activities, particularly short-term loans (Taswan, 2010; Gupta et al, 2004). This is also amplified that deposit funds are a relatively cheap source of funds and the funds are easy to obtain compared to other sources of funds. Thus it can be said when loan expansion strategy made by a bank, then it will seek a way to increase deposit funds. Conversely, in a condition where the bank implements a tightening loan policy, then the effort to obtain deposit funds will also decrease.

Economy activity is often associated with loan supply which then could affect the total amount of loan volume. If there is an increase in economic activity, it is likely that people will seek for more loans in the use of consumption and business purpose. This desire arises because the increase in economic activity makes people and

businesses feel confident that they will be able to perform loan repayment. This argument is supported by Burton et al., (2003) Dell'Ariccia and Marquez (2003), Eickmeier et al. (2008), and Blanchard (2003).

Conclusion

This research study about a variable that could predict loan volume. One of the measurements used by the researcher for a loan is loan volume. The increase in loan volume can be predicted through promotional costs, personnel costs, deposit funds and GRDP output. An increase in the cost of promotion can drive total volume of loans disbursed. This also applies to personnel costs. An increase in salaries and wages, bonuses, and other financial incentives can lead to an increase in the total of loan volume booked by the bank. This also happens to deposit funds. An increase in deposit funds could lead to an increase in the amount of credit disbursement as deposit funds are the main buffer for lending activities. For GRDP, an increase in GRDP output will also encourage the growing volume of loans. This is because economic activity will trigger loan demand from societies, including business industries.

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