



Full Length Review Article

ANALYSIS OF FACTORS AFFECTING THE NON PERFORMING LOANS (NPL) OF MICROCREDIT AND ITS IMPACT ON CREDIT CHANNELING IN MICROFINANCE SECTOR IN REGIONAL OFFICE X OF PT. BANK XYZ

^{1,*}Ikval Suardi, ²Hermanto Siregar and ³Dedi Budiman Hakim

¹School of Business, Bogor Agricultural University, Indonesia

^{2,3}Faculty of Economics and Management, Bogor Agricultural University, Indonesia

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ABSTRACT

Microbusiness sector, despite facing dynamics in the national economy, is proved to play a role and give significant contribution in boosting the nation's development because of its strategic position in labor absorption, economic recovery, and in giving equitable employment opportunities. In consequence, microfinance also has experienced rapid development. The purposes of this research were to analyse the transition of loan quality for identifying the collectability of Non Performing Loan (NPL) on microfinance sector in Bank XYZ Regional Office X, to analyze the factors that lead to the NPL in the microfinance in the Bank, and to study the impact of NPL of microcredit on the loan channeling in Regional Office X of Bank XYZ. Descriptive method was selected to obtain an overview of the factors that led to the NPL in Regional Office X of Bank XYZ and its impact on the amount of credit channeling in the micro sector. The logistic regression analysis was used to analyse factors affecting the NPL of the microcredit. The results show that growth in microcredit sector in Bank XYZ has increased every year, as well as in the regional office. Nonetheless, the growth of the NPL is also increasing every year. Age, Income, Plafond, Installment, Tenor, Collateral, Region and Economic Sectors have significantly affected NPL. Microloan channeling is more in villages than in cities. If seen from the results of the analysis, the impact of NPL to microcredit supply should indeed be negative, because the higher the NPL value is the more careful the bank will be in disbursing loans. In average, the frequency of microloan channeling in the villages is higher than in the cities.

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INTRODUCTION

Microfinance is the activity in financial sector in the form of gathering fund and lending or financing in micro scale simultaneously with a simple procedure to the poor and/or low-income (Baskara, 2013). Yaron (1994) illustrates the performance assessment framework of Microfinance Institutions (LKM) with two variables: sustainability and outreach. This model was updated by Zeller and Meyer (2002) by adding the variable of impact of welfare that is subsequently known as "The Triangle of Microfinance". This concept uses outreach, financial sustainability, and its impact as the LKM performance assessments in this time. Zeller and Meyer (2002) confirm the success of LKM can be identified from three characteristics, namely having the ability to reach, having financial sustainability, and giving improved welfare.

*Corresponding author: *Ikval Suardi*,
School of Business, Bogor Agricultural University, Indonesia.

Luzzi and Weber (2006) argue that LKM has double's that must be met; not only to provide loans to the poor, but also to consider their ability to repay it to avoid bankruptcy (sustainability). Microcredit is a form of financing that is potential to alleviate poverty (Lashley 2004, Brau and Woller 2004, Ahmad 2002, Navajar et al., 2000). Microcredit is necessary to suppress distribution of poverty; moreover, it will increase the level of productivity of households and will affect the income and consumption levels (Robinson, 2001).

Formulation of the problem

By looking at the micro business performance of Bank XYZ with the value of loan channeling up to IDR 164 trillion and with 7.3 million debtors, it can be said that the Bank XYZ has grabbed the market shares in microloan channeling and become the market leader in Indonesia. The following table shows the data on Non Performing Loan (NPL) in Bank XYZ from 2010 to 2014.

Table 1. Development of Loan Balance Outstanding of Small Medium Enterprises in 2010- 2014

Outstanding	(Billion Rupiah)				
	2010	2011	2012	2013	2014
SME credits	394,299	479,886	552,226	640,034	707,141
Non SMEs credits	1,416,960	1,779,975	2,226,731	2,742,838	3,072,234
Credit Banking	1,811,259	2,259,861	2,778,957	3,382,872	3,779,375

Source : Bank of Indonesia in 2014, processed

Table 2. Data on Non Performing Loan in Bank XYZ from 2010-2014

(Million Rupiah)

	2010	2011	2012	2013	2014
Total Credit Performing	245,447,849	287,675,177	355,369,649	441,045,020	501,617,268
Total Credit Non Performing	7,041,357	6,839,793	6,636,894	7,299,835	9,079,573
Total Credit	252,489,206	294,514,970	362,006,543	448,344,855	510,696,841
NPL (gross)	2.79	2.32	1.83	1.63	1.78
NPL (Net)	0.75	0.51	0.38	0.36	0.39

Source : Bank XYZ Annual Report 2014

In order the loan channeled to Small Medium Enterprises (SMEs) can generate revenue for Bank XYZ and the NPL level remains controlled, it requires an effort to manage loan channeling. One of them is by knowing what factors can cause a rise in the NPL. At the time when the Bank faces a potential increase in the NPL, the Bank should be able to identify early over the declining performance of the debtor, so that the Bank can avoid granting loans to the debtor or more broadly, avoid channeling loan on certain economic sectors that could potentially increase the NPL.

Research purposes

The purposes of this research are to:

- Analyse the transition of loan quality for identifying the collectability of Non Performing Loan (NPL) on microfinance sector in Bank XYZ Regional Office X.
- Analyze the factors that lead to the NPL in the microfinance in the Bank XYZ Regional Office X.
- Study the impact of NPL of microcredit on the loan channeling in Regional Office X of Bank XYZ.

Scope of Research

This research was conducted in Bank XYZ at the Regional Office X. This study was limited to analyze factors influencing collectability of NPL on the granting of microloans in the Bank XYZ at the Regional Office X. The samples were 760 microcredit debtors chosen based on the level of collectability of NPL where sampled debtors with NPL are as many as 400 debtors. The approach in this research was a case study in branch offices under the Bank XYZ Regional Office X as the object of research.

Literature review

Definitions of Non Performing Loans

A Non Performing Loan (NPL) is a financial term that indicates a bad loan. According to Bank Indonesia dictionary, NPL is bad credit, with late repayment or default. In general, a loan is said to be a Non Performing Loan if after the third month (ninety days) there is a late repayment. A loan with three to five collectability level is mostly avoided by banks because it can indicate bad performance of the bank in managing loans. According to Bank Indonesia, the maximum NPL level is 5%.

Veithzal and Rivai (2005) argue that NPL is a loan in which implementation has not yet reached the desired target by the bank. Any loan given by the bank always bears risks. The risk of loan can be late repayments from the establishment of due date. Therefore, the bank should choose a debtor with good financial performance to minimise the incidence of NPL. Non Performing Loans (NPL) are all loans that bear high risks. NPL can be loans containing flaws or not meeting the quality standards set by the bank (Arthesa and Handiman, 2006). Credit risk arising can be seen from the value of Non Performing Loans (NPL). NPL is a large amount of funds distributed to the public in the form of credits that can not be repaid on time has been agreed upon. Non performing loans in general are all high risk loans. Non Performing Loans are the loans which contain weaknesses or do not meet the quality standards set by the bank (Arthesa and Handiman, 2006).

According Musthikaningtyas (2011), there are at least three impact of Non Performing Loans, that is :

1. Lowering Profitability

The higher the NPL, the higher the losses will be suffered. These losses will reduce the level of profitability so that the image in the eyes of the public health of banks and the banking world will decline.

2. Adding Operational Costs

The central bank requires each bank to provide backup elimination of problem loans. If the problem loans increases, reserves of problem loans to be provided will increase anyway. Costs to be incurred for the provision also will increase.

3. Decrease The Percentage of Capital Adequacy Ratio (CAR)

Losses due to the level of problem loans will reduce the CAR of the bank concerned. The lower the CAR, the lower the level of the operating health of business in the eyes of the Central Bank. The study by Khemraj and Pasha (2009) in Guyana, concludes that some of the macro-economic variables such as exchange rates, GDP growth, and interest rates are the dominant factors affecting the level of NPL. Meanwhile, the research conducted by Farhan *et al.* (2012), confirms that NPL ratio in Pakistan is strongly influenced by macroeconomic changes, such as inflation (CPI) and the interest rate that have a positive relationship with NPL ratio. Higher inflation rates in

Pakistan lead to increasing NPL ratio. Meanwhile, according to research by Collins *et al.* (2011) and Gremi (2013), interest rates have a strong and positive influence on NPL ratio of the bank. Higher interest rates cause higher NPL ratio. These results indicate that if interest rate is high, many borrowers would not comply with the requirements set by the bank. Aziz (2013) found that the cause of NPL is the use of loans that is incompatible with the initial purpose at the time of loan submission. Even so, some NPL can be sourced from internal factors, such as the quality of human resources of the bank, company policy (Joseph *et al.*, 2012) or procedural processes in risk management of the bank (Swamy, 2012). Zaib *et al.* (2001) in their research found that management of bank has an influence on the NPL ratio. From the result of their research, separation of function of RM and CA brings a significant influence to the quality as well as quantity of loans channeled by Bank XYZ in Jakarta.

Research Accomplished

Alam (2008), to analyzed the factors affecting the increase in Non Performing Loans (NPL) and its impact on SME Lending Sector (Case Study BRI). This study uses a statistical test two econometric model. The first model is the relationship between the value of LDR, the real interest rate of BRI, and BI policy to NPL, while the second model is the relationship between the NPL and the trend towards total outstanding loans in the SME sector BRI. The results showed that affecting the increase in NPL is the policy of Bank Indonesia, LDR, real interest rates Bank BRI. Only the Bank Indonesia policy that significantly whereas the LDR and real interest rates are not significant. Rachmat (2009), conducted research titled Influence of Characteristics of the Borrower to the Credit Payment Smoothness of Bank XYZ. The approach of this research is descriptive analysis, by conducting a survey of secondary data to be analyzed. Endogenous variable in his research was the smoothness of credit payment views from its collectibility, and timeliness of payments views from its payment patterns, whereas its exogenous variables are demographic, economic, and business borrowers.

These variables can be assessed age, sex, marital status, formal education, number of dependents, possession of a residence, the working status of the pair, the ratio of revenue to large installments, the percentage of own funds, ownership of business premises, long efforts, the number of workers, business location, the existence of other business, the term of the loan, and the loan ceiling. These variables were analyzed using binary logistic regression and multiple logistic regression (ordinary logistic regression). The results using binary logistic regression demonstrated that only a few variables that have a significant influence. At the 5% significance level, the variables that influence the age and number of dependents. In the real level of 1% variable that significantly is the ratio of income over expenditure of households, the ratio of income to installment loans, and long effort. The results using ordinary logistic regression proved that the real level of 1% only a few variables that influence significantly. These variables were age, number of dependents, the ratio of income over expenditure of households, the ratio of net income to installment loans, long effort, and borrowing ceiling. Melala (2006), an analysis of the causes of default loan in Swamitra. The analytical tool used is descriptive analysis, factor analysis, logistic regression analysis, and multiple regression analyzes with SPSS 11.5. Descriptive

analysis evaluates the policies and the implementation of lending. The result amounted to 98.37% of loans have been processed according to the procedure. Amounting to 96.75% of borrowers are eligible borrower. Factor analysis was performed to reduce and classify the variables in the value of the evaluation form of loans, the performance (variable long tried, business reputation, the age of the borrower, business administration, possession of a residence, business ownership), kapaitas (Variable income / liabilities, income / flowers, own funds). Logistic regression analysis was used to determine the factors that affect the defaults on the loan. Endogenous variable in this study is the rate of return on the loan (Collectibility). These variables are marked with the number one (1) if the member who received loans in arrears (Collectibility 2-4), zero (0) if the member is not in arrears (Collectibility 1). Exogenous variables used are variables selected from the factor analysis, namely Performance, capacity / ability to repay, the capacity of members, coaching and monitoring, and collateral. Adnan and Furywardhana (2006), examines the Evaluation of Non Performing Loan (NPL) loans Qardhul Hasan. This research was conducted in BNI Syariah Branch Yogyakarta. Variables used in this research is the Non Performing Loan (NPL), Character, Collateral (in the form of reference), payment and purposes. Variable NPL is an endogenous variable, while the character, reference, payment and purposes is an exogenous variable. The results showed that the most influential factor is the character. 100% of customers who have good character is less by 62%.

While customers who have good character is 38%. This shows that the trend of bad credit is equal to the percentage of customers with less good character, ie by 62%. Characters and NPL have a negative relationship, which means that the customer is getting better character, NPL will fall. This study uses regression to facilitate analysis. Lubis (2002) conducted a study entitled Assessment Rescue Pola NPL at ABC Bank (Bank Case Study on "X"). This study aimed to evaluate the performance of PT. "X" and prospects for the future in terms of saving the Non Performing Loans and a review of the appropriate pattern for the rescue of the troubled loans. The method used in this research is a case study using the analysis of company's financial ratios (liquidity ratio, ratio leverage, activity ratio, coverage ratio and profitability ratio also use the analysis cash flow projections. The results of this study concluded that the decline in sales due to declining demand for products of consumers, their increased production costs led to the company can not handle its own needs as well as their rivals from outside the country in terms of production costs are cheaper. Safandi (2009) conducted a study entitled Strategic Studies in granting small business loans (KUK) by PT. BRI (Persero) Branch Office Bogor.

This study aims to evaluate and study the mechanisms and procedures for granting small business loans (KUK) applied BRI to small entrepreneurs, identify and analyze the factors that become an obstacle and support in the delivery of KUK. The method used in this research is a case study using an external internal analysis and SWOT analysis. The results showed that the ratio of KUK decline caused by the increase in total loans given mainly of credit priority, but still far from the government's resolve 20 percent of total loans. While the results of SWOT for the strategy of credit is to improve the quality and quantity of KUK selectively and direction, strengthen the image of BRI to provide better service strategies

that can be implemented to improve the quality of human resources to handle KUK and guidance to the debtor as well as explore business information so that creation of customer loyalty. Andhayani (2009), doing research on the development of credit scoring models for the process of analyzing the feasibility of the housing loans (the case study at Bank X). Research results indicate factors that affect credit quality significantly is the interest rate, number of dependents, age, type of job, take home pay, on average balances, bank deposits, the percentage of the down payment, type of collateral, documents of ownership, and the building area, To help research, analytical tools used in this research is a logit analysis and test wald. Lee and Liu (2002), found 19 variables that influence the occurrence of default (default), namely gender, marital status, source of family income, ownership of debt, the purpose of the purchase of housing, employment, age, education level, gross income, net income, total loans, the value of collateral, Loan to Value (LTV), Loan to Price ratio (LTP), a grace period of the loan, monthly payments, the ratio of principal and interest payments to gross income, the ratio of mortgage payments of principal and interest on net income, as well as interest rates. This study uses three tools of analysis, namely discriminant analysis, probit and logit analysis. The results showed that marital status, LTV and the purpose of purchasing housing most significant influence on the risk of default.

METHODS OF RESEARCH

Data Types, Data Sources, and Sample

In this research, the author utilized secondary data. The data used was data acquired not based on direct field observation but retrieved from another source. The data was in the form of ordinal data. The data required in research and the data sources can be seen in Table 3 below.

Table 3. Data required in the research and the sources

	Data	Data Sources
1.	Historical microcredit and credit NPL PT. XYZ Bank and the Regional Office X.	Head Office Bank XYZ dan Regional Office X.
2.	Data Customer Loan (Gender, age, education, employment, income, plafond, installment, collateral, tenor, region, and sectors of the economy).	
3.	Other data relating to the performance of lending Bank XYZ.	

Methods of Analysis

Data collected was treated by using logistic regression analysis. The variables used were composed two variables, i.e., namely the independent variable non categories of debtors and dummy variables. The independent variables used non categories debtor is installment, plafond, tenor, education, and age. Debtor dummy variables used to analyze NPL is gender, income, collateral, employment, region and economic sector. The available data was processed using the descriptive analysis and logistic regression.

Logistic Regression Analysis

Binary regression model is a model that is used to find out the binary relationship between the explanatory variable (X) and

response variable (Y). Response variable Y follows Bernoulli distribution with distribution opportunity function:

$$F(Y = y) = \pi^y (1 - \pi)^{1-y} \dots \dots \dots (1)$$

with $y = 0$ or 1 , and π is the probability of $y = 1$.

If the sum of response variable (Y) is n , the probability of every event is the same, and every event is mutually free, then Y will follow Binomial distribution. The regression model with $E(Y = 1 | x)$ as $\pi(x)$ is :

$$\frac{\exp g(x)}{1 + \exp g(x)} \dots \dots \dots (2)$$

Logistic regression requires logit link function, and the logit transformation as the function of $\pi(x)$ is:

$$g(x) = \ln [\pi(x) / 1 - \pi(x)] = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p \dots (3)$$

thus in general, the function is:

$$g(x) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} \dots \dots \dots (4)$$

Description:

- $g(x)$ = Non Performing Loan Function
- β_0 = Regression logisticintercept
- β_j = Regression coefficient of independent variable- i , where i = (Gender, age, education, employment, income, plafond, installment, collateral, tenor, region and economic sector.
- X_1 = Gender (dummy variable $X_1 = 0$ is female and $X_1 = 1$ is male)
- X_2 = Age (year)
- X_3 = Education (year)
- X_4 = Employment (dummy variable $X_4 = 0$ is businessman/entrepreneur and $X_4 = 1$ is non businessman/entrepreneur)
- X_5 = Income (dummy variable $X_5 = 0$ is \leq IDR 5 million and $X_5 = 1$ is \geq IDR 5 million)
- X_6 = Plafond (IDR million)
- X_7 = Installment (IDR)
- X_8 = Tenor (month)
- X_9 = Collateral (dummy variable $X_9 = 0$ is no collateral and $X_9 = 1$ is there collateral)
- X_{10} = Region (dummy variable $X_{10} = 0$ is the area of Java and $X_{10} = 1$ West Kalimantan region)
- X_{11} = Economic Sector (dummy variable $X_{11} = 0$ is trading and $X_{11} = 1$ is non trading)

For explanatory variables with certain categories, a dummy variable is required. Generally, a variable with a nominan or ordinal scale has k probability value, it then requires $k - 1$ dummy variable. For example, an explanatory variable $ke-j$ has kj level. Dju represents $kj-1$ of dummy variable, while β_{ju} is coefficient of dummy variable with $u = 1, 2, \dots, 3, kj - 1$. Thus, the logit model with explanatory variables p and $ke-j$ are discrete.

$$g(x) = \beta_0 + \beta_1 X_1 + \dots + \sum_u^{kj-1} \beta_{ju} Dju + \beta_p X_p \dots \dots (5)$$

To estimate the parameters, usually a method of maximum likelihood is used. If each sample is assumed to be independent, thus the function of maximum likelihood is :

$$l(\beta) = \prod_{i=1}^n \pi(x_i)^{y_i} [1 - \pi(x_i)]^{1-y_i} \dots\dots\dots (6)$$

Description :

- i = 1, 2, ..., P
- y_i = Observation at an explanatory variable i
- $\pi(x_i)$ = Probability of an explanatory variable i

β_i is assumed by maximizing $l(\beta)$ with a logarithm approach, and so that the *log-likelihood* function is given below :

$$L(\beta) = \sum_{i=1}^n \{y_i \ln[\pi(x_i)] + (1 - y_i) \ln [1 - \pi(x_i)]\} \dots\dots (7)$$

The estimated value β_i can be obtained by making the first derivatives of $L(\beta)$ to $p \beta_i = 0$, with $i = 1, 2, 3, \dots, p$

Testing against the parameters in the model was done to examine the role of the explanatory variables in the model. According to Hosmer and Lemeshow (1989), to find out the role of the entire explanatory variables in a statistical model, G-test statistics can be under taken simultaneously. In this study, the hypotheses tested were

- Ho : $\beta_1 = \beta_2 = \dots \beta_6 = 0$
 - H1 : at least 1 $\beta_i \neq 0, i = 1, 2, \dots, p$
- G-test statistics is defined as:

$$G = -2 \ln L_0 / L_p \dots\dots\dots (8)$$

Description:

L_0 is a likelihood function without an explanatory variable, and L_p is a likelihood with a p explanatory variable. If the null hypothesis (H0) is accepted, the G-test statistics will spread following the distribution of χ^2 with p degree. Meanwhile, H0 is rejected if $G > \chi^2_{p(\alpha)}$ To identify the coefficient of interpretation in a logistic regression model is by looking at the odds ratio. Logit model coefficient of β_i reflects changes in the value of $g(x)$ for change in an explanatory variable (x). In the analysis of logit model, the formula of odds ratio is :

$$\Psi = \exp \beta_i = \exp [g(1) - g(0)] \dots\dots\dots (9)$$

Interpretation of the explanatory variables shows the odds ratio (x) with a nominal scale, with $Y = 1$ at $X = 1$ is ψ times compared to $X = 0$. The odds ratio can also be described with the formula:

$$\Psi = p / 1-p \dots\dots\dots (10)$$

In this research, p explains NPL, while $1-p$ represents performing loans. The result of the *odds ratio* can be interpreted as greater than one (>1) or smaller than one (<1). Logistic regression analysis was performed with Minitab 16.

To analyze the third objective of the research, a simple regression was utilized, with the formula:

$$CM_i = \beta_0 + \beta_1 NPL_i + DDK_i + e_i$$

where :

- CM_i = Loan channeled at the Unit i
- NPL_i = *Non Performing Loan* at the Unit i
- β_0 = Intercept
- β_2 = Regression Coefficient
- i = Unit i (Branch Office)

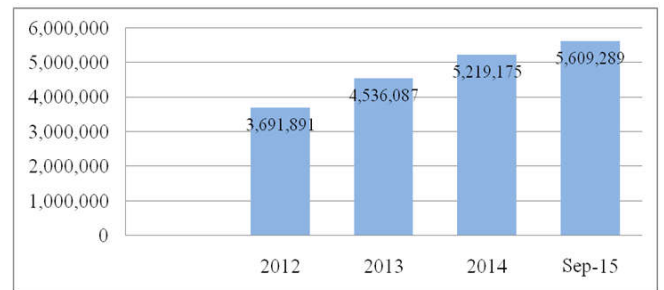
DDK = *Dummy Villages – i Cities*, where villages = 0 dan cities = 1, of location from Unit i .

To analyse the first objective of this study, a matrix was made, namely to analyse the transition of collectability of NPL from every branch office under the supervision of Regional Office X.

RESULTS AND ANALYSIS

Description of the Development of Microcredit on Regional X of Bank XYZ from 2012 to September 2015

Microcredit is the prominent business segment of Bank XYZ which is designed and intended to serve individual clients and to enhance microenterprise development. The following is a description or overview of microcredit channeled annually, and the factors that affect the NPL related to debtors at Regional X of Bank XYZ in 2012 until Sep-2015. Each stage of credit channeling must always be carried out with precautionary principle. NPL has an impact not only on the drop in profitability, but also higher cost of capital that makes the bank become increasingly uncompetitive. Based on data obtained in Bank XYZ headquarter, here is the growth of microcredit in the Bank XYZ Regional X.



Source: Central Office of Bank XYZ Distribution of Microcredit in 2012-Sep2015

Figure 1. Outstanding microcredit Regional Office X in 2012-Sep-2015

Based on the figure above, the overall growth of the microcredit from 2012 to September 2015 at the regional bank shows improvement.

Microcredit Channeled from 2012 to September 2015

Microcredit Channeled in this research were taken from 2012 to September 2015. For Bank XYZ Regional Office X there are 22 branch offices serving microcredit of 36 branch offices under the Regional Office X is Sanggau, Putussibau, Daan Mogot, Singkawang, Serang, Sintang, Rangkasbitung, Pandeglang, Tangerang, Pamulang, Jelambar, Cilegon, Labuan, Pontianak, Mempawah, Ketapang, Tanjung Duren, Tangerang Merdeka, Balaraja, BSD, Ciputat and Ciledug. Table 4 below shows the development of microcredit channeling in Bank XYZ Regional Office X. From the total 22 branch offices, there is a unit that serves loan submission. In year 2012 until 2015, the number of the units is 232 in year 2012, 241 in year 2013, 252 in year 2014, and 253 in year 2015. From 2012 – 2015, the units under the Regional Office X increase by as much as 21 units that can serve the microcredit submission. Based on Table 4 above, distribution of microcredit from 2012 – September 2015 at Regional Office X of Bank XYZ has increased each year. In 2013, the amount of microcredit channeled is up to IDR 4,536 billion, increasing

18.61% i.e. IDR 844 Billion from the previous year in 2012. In 2014, the the microcredit channeled reaches IDR 5,219 billion, increasing just 13% or experiencing a decline from the previous year, namely IDR 683 billion in 2014. In the third quarter of 2015, the credit channeled IDR 5,609 billion, increasing 6.95% amounting to IDR 390 billion than the end of 2014. From Table 4 above, it can be concluded that 22 branch offices serve microcredit channeling, and nearly all offices experience an increase in performance; however, there are 3 offices that experience a decline from the third quarter or September 2015 from the previous year, namely Daan Mogot, Pandeglang and Putussibau. The addition of units in 2012 – 2015 also positively impacts towards the increasing microcredit channeling by Bank XYZ at Regional Office X.

Overall, microcredit channeling has increased every year and this indicates good performance of Bank XYZ Regional Office X. Also, based on Table 4 above, there are 22 branch offices under the supervision of the regional office that serve microcredit channeling. Each year, the regional office shows positive performance in channeling microcredit with the increasing growth from the respective regional offices each year. However, there are several branch offices that experience decreased performance in 2015, namely Daan Mogot with IDR 7,178 billion or 1.4% decrease from that of 2014, Pandeglang with IDR 17,237 billion decrease or 16.2% and Putussibau with a decline of Rp. 17,966 billion or 12.8% from the year 2014. Based on IPA (Importance Performance Analysis), here is the report of the growth of number of credit

Table 4. Outstanding microcredit channeling per branch office in the Regional Office X in 2012 – Sep 2015

No	Office Branch	OUTSTANDING							
		Total Unit	2012	Total Unit	2013	Total Unit	2014	Total Unit	Sep-15
1	Cilegon	10	207,106	10	233,294	10	266,778	10	291,410
2	Jakarta Tangerang	18	238,036	19	291,036	21	356,057	21	402,148
3	Bumi Serpong Damai	7	115,791	9	146,973	9	195,449	9	225,721
4	Ciledug	8	82,141	8	101,049	9	119,929	9	133,393
5	Ciputat	5	113,345	5	134,936	5	153,692	5	171,712
6	Daan Mogot	17	433,130	17	486,346	17	488,642	17	481,463
7	Balaraja	7	98,206	8	117,932	8	137,045	8	165,533
8	Jkt Jelambar	10	116,023	11	139,605	11	148,128	11	157,827
9	Jkt Tanjung Duren	10	161,603	11	180,617	11	185,806	11	195,819
10	Pamulang	12	120,544	12	176,918	13	214,171	14	247,779
11	Tangerang Merdeka	9	113,883	9	145,851	10	169,798	10	194,514
12	Ketapang	11	125,467	11	153,507	11	164,913	11	177,816
13	Labuan	6	91,569	6	117,925	6	141,888	6	144,407
14	Mempawah	10	171,721	10	176,463	10	186,551	10	206,230
15	Pandeglang	6	71,198	6	106,688	6	122,998	6	105,761
16	Pontianak	16	268,096	17	317,562	19	415,357	19	488,117
17	Putussibau	6	122,921	6	158,720	6	158,231	6	140,265
18	Rangkasbitung	10	138,022	10	191,550	10	242,304	10	266,878
19	Sanggau	12	270,960	12	349,284	13	440,130	13	459,273
20	Serang	15	186,056	15	262,105	18	314,152	18	350,124
21	Singkawang	18	270,124	19	328,832	19	364,032	19	368,641
22	Sintang	9	175,939	10	218,884	10	233,114	10	234,444
TOTAL		232	3,691,891	241	4,536,087	252	5,219,175	253	5,609,289

Source: Bank XYZ Regional Office X (processed)

Table 5. Development of Microcredit Collectability in the Regional Office X

Years	Development of Microcredit Collectability in the Regional Office X				
	1	2	3	4	5
2012	3,380,742	270,803	10,489	11,053	18,803
2013	4,136,368	349,209	14,906	15,477	20,127
2014	4,650,527	500,532	23,368	23,166	21,582
Sep-15	4,933,099	583,372	30,487	25,401	36,929

Source: Central Office of XYZ Bank Lending In 2012 Micro-Sep2015 (processed)

Table 6. Factors affecting the probability of NPL

Variabel	Koefisien	Probabilitas	Odds Ratio
Constant	0.028	0.975	
Gender (X ₁)	-0.157	0.484	0.85
Age (X ₂)	0.026**	0.014	1.03
Education (X ₃)	0.036	0.464	1.04
Employment (X ₄)	0.593	0.235	1.81
Income (X ₅)	-1.329*	0.076	0.26
Plafond (X ₆)	0.0000001***	0.000	1.00
Installment (X ₇)	-0.0000024***	0.000	1.00
Tenor (X ₈)	-0.092***	0.000	0.91
Collateral (X ₉)	-1.060***	0.000	2.89
Region (X ₁₀)	-6.511***	0.000	0.00
Economic Sector (X ₁₁)	-0.952**	0.027	0.38

Log-likelihood = -249.980, G = 315.640, P value = 0.000

Description : *** significant at $\alpha = 1\%$ ** significant at $\alpha = 5\%$ *significant at $\alpha = 10\%$

channeling in Regional Office X compared to the NPL growth. By 2015, the branch offices in Quadrant 1 are BSD, Ciledug, Pontianak, Mempawah, Cilegon, Serang, Rangkasbitung and Pamulang. Quadrant I is the wariest quadrant because in this quadrant, some units have NPL growth above average, but they also show a very high credit growth.

This means that this area is the most potential to have higher NPL growth. Quadrant II is an area having NPL growth per unit smaller than average. However, this area will also potentially have increased NPL as the NPL growth exceeds the average growth. Quadrant II are branch offices located in Sintang, Tanjung Duren, Sanggau, and Singkawang.

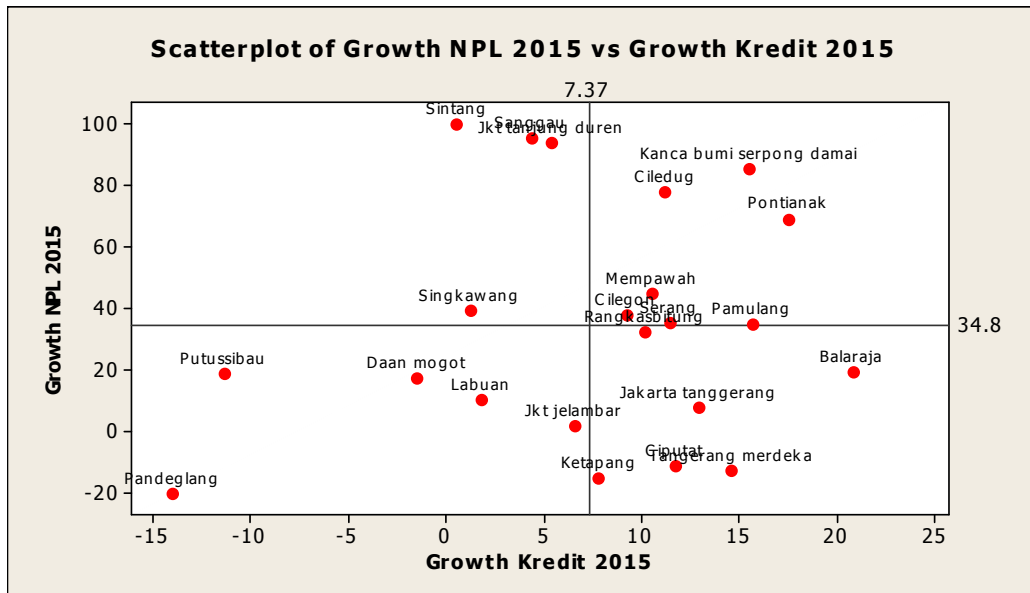
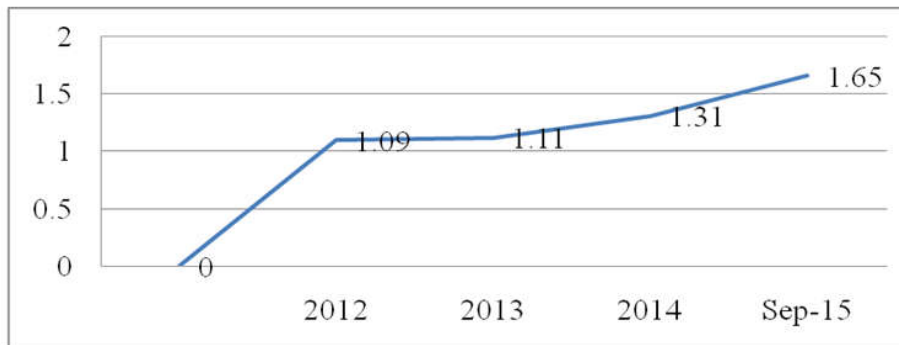


Figure 2. Analysis IPA credit growth and the growth of NPLs in 2015



Source: Central Office of Bank XYZ in 2012-Sep, 2015

Graph 1. Growth of NPL Regional Office X in 2012 - September 2015

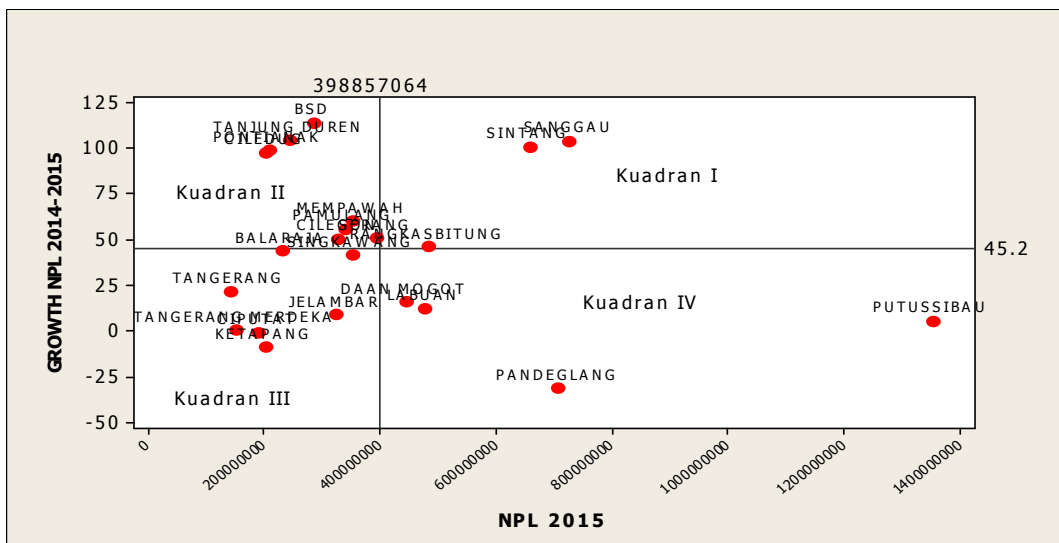


Figure 3. Analysis of IPA total NPL and NPL growth in 2015

Quadrant III is the safest quadrant for the bank. That is because in this quadrant, the branch offices show the loan growth below average, and so is the NPL growth. In this condition, the Bank only needs to maintain the NPL and tries to lower the ratio. Branch offices located in Quadrant III are namely Putussibau, Pandeglang, Daan Mogot, Labuan and Jelambar. Quadrant IV is the quadrant that has NPL growth above average but the growth is still relatively small. It means in this quadrant the Bank is expected to reduce NPL ratio. Branch offices belonged to this quadrant are Balaraja, Tangerang, Ketapang, Ciputat and Tangerang Merdeka.

Development of NPL or Collectability of Microcredit Regional Office X

From the data obtained, NPL ratio for microcredit in Regional X has increased each year. It can be seen from the graph below.

Graph 1 shows the NPL level varies from year to year. From 2012 – September 2015, NPL ratio of micro-credit is increasing, coupled with the growth of microcredit channeling in Regional Office X that has increased every year. According to Siamat (2004), the increased lending would pose a risk, that is, the incidence of NPL. The NPL is a condition where the debtor cannot make loan repayment, including the interest and the principal within the period agreed upon as stated in the agreement. Based on IPA (Importance Performance Analysis), here is the total NPL of Regional X compared to NPL growth of the Regional Office X.

By 2015 the branch offices in Quadrant I are Sanggau, Sintang, and Rangkasbitung. Quadrant I is the riskiest quadrant since this quadrant has units with NPL ratio above average and with a very high growth rate. This means that this area is the most potential to have even higher NPL. Quadrant II is a zone that has NPL ratio per unit smaller than average. Nevertheless, this area will also have potentially increased NPL to become higher since the NPL growth exceeds the average growth. Branch offices in Quadrant II are BSD, Tanjung Duren, Pontianak, Mempawah, Ciledug, Pamulang, and Serang. Quadrant III is considered the safest for the bank. Banks in Quadrant III have NPL ratio and NPL growth below average. In this condition, the Bank is only required to maintain the NPL while trying to reduce it. Branch offices in this quadrant are Singkawang, Tangerang, Tangerang Merdeka, Jelambar, and Ketapang. Quadrant IV is the quadrant having NPL ratio above average but small NPL growth. It means this quadrant is still potential to reduce NPL ratio. The branch offices categorized into this quadrant are Daan Mogot, Labuan, Putussibau and Pandeglang. Here is the development of collectability of microcredit of Regional Office X from 2012 – September 2015.

Analysis of Factors Affecting Non Performing Loan (NPL) of Microcredit in Regional Office X

In the research, the independent variables are termed as explanatory variables, while the dependent variables are called response variables. A logistic regression model estimates are presented in Table 6.

Table 6 shows the result of logistic regression on the factors that are thought to have probability against the NPL. From the table, the regression model, the coefficient of each variable,

and their influence can be estimated. The following is an explanation of each of the variables as the internal factors of the debtor. As mentioned in Methodology chapter, factors that have a chance of NPL are gender, age, education, job, income, plafond, installment, tenor, collateral, region variable and economic sector. Model and Table 6 show the factors, both having significant or not significant influences. The model shows that the factors having influence on NPL but not significant are Gender, Education, and Job. The finding shows Gender has coefficient of 0.157 and P value of 0.484; Education has coefficient of 0.036 and P value of 0.464, and; Job has coefficient of 0.593 and P value of 0.235. It can be concluded that when gender, education, and job change, it is possible for performing loans, but since the P value is greater than $\alpha = 10\%$, gender, education and employment do not cause NPL.

Factors Possessing Significant Influences

Age

One of factors having significant influences on the variables is age, with regression coefficient of 0.026 ($\alpha = 5\%$) and P value of 0.14 with odds ratio of 1.03. The odds ratio is greater than one, indicating that age affects NPL 1.03 greater than the performing loans. In other words, the older the age of the debtor is, the more possible he would not make the payment, that leads to NPL. The result of this study is in accordance with the research conducted by Musthikaningtyas (2011), Rachmat (2009), Andhayani (2009) and Yoshi (2014).

Income

The result suggests the regression coefficient of income is -1.329 and P value is 0.076. Thus, it can be concluded that Income has a significant influence on NPL because the P value is smaller than $\alpha = 10\%$. The negative sign on the coefficient indicates that the relationship between income and NPL is negative. Meanwhile, the odds ratio is 0.26 which is less than one; it means income leads to performing loans more than NPL by 0.26 times. In other words, if income is greater, there will be performing loans and smaller probability for NPL. The result of this study is similar to the research conducted by Musthikaningtyas (2011) and Tina (2014).

Plafond

Seen from the value of Plafond, higher plafond leads to higher chances of the debtor to have performing loans. Musthikaningtyas (2011) points out that the lender provides the plafond to facilitate debtors in channeling loans by using a specific calculation. In this research, Plafond significantly influences NPL. There is also a positive relationship between Plafond and NPL, so that higher plafond selected causes higher probability of NPL. With the odds ratio of 1.00, the debtor having greater plafond will have 1.00 times probability for performing loans compared to the debtor having smaller plafond. The result of this study has been in accordance with the research conducted by Rachmat (2009) and Tina (2014).

Installment

If seen from installment, higher installment will result in higher probability of debtors to have performing loans. In this research, installment has significant influence against NPL.

With the odds ratio of 1.00, the chance of the debtors having larger installment to have performing loans is 1.00 times higher compared to those with smaller installment. The results of this study shows similarity to the research conducted by Musthikaningtyas (2011).

Tenor

One of the explanatory variables of the debtors that has significant influence is Tenor. The negative coefficient on Tenor variable, namely -0.092 describes that if the debtor has as short term tenor, they will have greater opportunities to have performing loans. The odds ratio of 0.91 proves that the probability of a debtor having longer tenor to performing loans is 0.91 times higher than a debtor with smaller tenor. In other words, longer tenor leads to bigger possibility for performing loans. This can be made possible due to greater awareness to pay among debtors who have short term tenor. The finding is in relation with the research conducted by Musthikaningtyas (2011) and Tina (2014).

Collateral

With or without collateral, both have an influence on a debtor's probability for performing loans or NPL. The coefficient of -1.060 indicates that if a debtor submits collateral, he will have a greater chance to performing loans. Odds ratio of 2.89 proves that the probability of a debtor having collateral to have performing loans is 2.89 times greater compared to the debtor with no collateral. The result of this study has been in accordance with the research result by Arlan (2011).

Region

Another explanatory variable that has a significant influence is Region. The negative coefficient of Region that is -6.511 explains the negative relationship between West Kalimantan and Java. From the odds ratio of 0.00 which is less than one, it shows that Java region will give effect on the performing loans, namely by 0.00 times compared to West Kalimantan region. In other words, the chance of the debtors in West Kalimantan to have performing loans is 0.00 smaller than the debtors in Java.

Economic Sector

The next explanatory variable providing significant influence is economic sector. The negative coefficient on Economic Sector that is -0.952 describes the relationship between trade and non-trade is negative. From the odds ratio of 0.38 which is less than one, it can be seen that trade has more effect on the performing loans by 0.38 times than non trade. The result of this study has something in common with the research conducted by Yoshi (2014). Table 6 also shows the log-likelihood value, G, and P value of G statistics used to test the hypotheses. The null hypothesis (H_0) in this study is none of the explanatory variables has an influence on the model, whereas Hypothesis 1 (H_1) is at least one of the explanatory variables has an influence on the model. The hypothesis can be written as follows:

$$H_0 : \beta_i = 0, i = 1, 2, \dots, 10$$

$$H_1 : \text{at least 1 } \beta_i \neq 0, i = 1, 2, \dots, 10$$

The G value on the output is 315.640 with a P-value of 0.000, indicating that there is at least one explanatory variable that is not null or which does not have an effect on the model. The Goodness of fit test using either Pearson, Deviance or Hosmerleme show shows odds ratio < 5 percent. It proves that the model used is fit and good. Table 4 shows the factors assumed to affect NPL; it is obvious that variables having odds ratio are significant at $\alpha = 1\%$ namely Plafond, Installment, Tenor, Collateral, and Region. Variables having odds ratiosignificant at $\alpha = 5\%$ are Age and Economic Sector. Meanwhile, a variable having significant probability at $\alpha = 10\%$ is Income.

The Impact of NPL against Microcredit Channeling in Regional Office X

The Non Performing Loan (NPL) is a financial term that indicates abad loan. The following explanation describes the analysis result of the impact of NPL against microcredit channeling in Bank XYZ Regional Office X by using simple regression.

Table 7. The Impact of NPL against Microcredit Channeling in Regional Office X

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPL	-0.036243***	0.004180	-8.671085	0.0000
DDK	-0.048635***	0.007368	-6.600774	0.0000
C	23.70735	0.006910	3430.812	0.0000

Description : *** = significant at $\alpha = 1\%$

The result of estimaton model in Table 7 can be written as follows:

$$CMI_i = \beta_0 + \beta_1 NPL_i + DDK_i + e_i$$

$$23.707 - 0.036NPL_i - 0.049\Delta DK_i$$

The regression coefficient of NPL variable is -0.036 with a P value of 0.0000, indicating that NPL significantly lowers the microcredit channeling. The regression coefficient of city-village as the dummy variable is -0.049 with P value of 0.0000, which means that microcredit channeling in villages is significantly higher than in cities. Based on the analysis result, the impact of NPL to loan channeling should indeed be negative, because a bank with higher NPL will be more careful in disbursing loan. In average, the microcredit channeling in the villages is higher than in the cities with the average value of IDR 22,584,960,403.- for the villages, and IDR 21,537,902,004 for the cities. This is in line with the result of the study by Astrini *et al.* (2014) that the greater amount of loans disbursed will provide greater risks to be borne by the bank. Furthermore, higher NPL ratio makes the bank tend to be cautious in channeling loans. The inefficient loan channeling will lead to NPL. Policy on loan channeling strategy can reduce the occurrence of NPL (Novitayanti and Baskara, 2012). In addition, a positive loan growth will boost economic growth as the loans will move the economy by providing additional financing for real sectors both in terms of industry as well as in the community consumption (Prihatiningtyas, 2013).

Managerial Implications

From the research results, several managerial implications can be formulated as follows:

1. In disbursing loans, age must be considered in analyzing the prospective debtor. Based on the results

of analysis on factors affecting NPL, Age variable has a significant influence on the probability of NPL.

2. Income is one of the important information of the debtor that should be taken into consideration by the creditor for having performing loans, including the interest and the principal. In other words, from the income, the creditor will estimate the ability of the debtor in fulfilling their obligations. To cover the loan, the debtor's income should be at least two or three times the installment per month.
3. Other factors as the research variables are namely plafond, installment, tenors, collateral, region and economic sector that have a significant impact on NPL should be given a special attention, particularly when analyzing a prospective debtor.
4. Analysis result on the impact of NPL against loan channeling has a negative coefficient that is -0.036 with odds ratio of 0000; this finding indicates loan channeling in the villages is greater than in the cities. The finding also indicates that the impact of NPL to loan is negative, because higher NPL will demand the bank to be more careful in granting loans.

Conclusion

The conclusions of this research is:

1. Loan channeling in Bank XYZ undergoes an increase every year as in the regional offices.
2. The finding of this study has proved that the variables of Age, Income Plafond, Installment, Tenors, Collateral, Regions and Economic Sectors have a significant probability of NPL.
3. Furthermore, the amount of loan channeled in the villages is higher than in the cities. It means the impact of NPL on loan should indeed be negative, because higher value of NPL will force the bank to be more careful in granting loans.

It is suggested that further research could add other variables potential to cause NPL. Further research could also be developed by engaging the debtors from other regional offices as the sample, it would be found which regional office has a higher possibility of NPL.

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