Non-Performing Loans & Bank Profitability: Study of Joint Venture Banks in Nepal

Bishop Panta[*]

Ace Institute of Management (student), New Baneshwor, Kathmandu, 44600, Nepal

Email: bishop.panta@gmail.com

Abstract

The study investigates the bank-specific & macroeconomic determinants of non-performing loans as well as its impact on profitability. It uses secondary data of 7 joint venture from the year 2006 to 2017 and employs a fixed effect panel model in estimating three different empirical equations. The bank-specific variables taken are capital adequacy, net interest margin, the size of banks measured by total assets & loan to deposit ratio. Similarly, the macroeconomic variables include GDP growth, inflation and loan concentration of the banking industry measured by the Herfindahl-Hirschman Index. A non-performing loan is taken as both the independent and dependent variable; firstly to find out its determinants and the variable that comes significant during the process of finding the determinants is taken as the variable that affects the profitability. The study finds the net interest margin and bank size as the determinants of the non-performing loan & suggest that net interest margin has a positive and significant effect while the bank size has a negative and significant relationship. However, the macroeconomic variables do not relate. Furthermore, when the net interest margin, bank size & non-performing loan are used as an independent variable, its significant effect is seen with the profitability. An insignificant relationship is seen with the return on equity in terms of only bank size. Three conclusions derived from this study are: firstly as the net interest margin rises for the banks so does the bankability to earn from the interest income which increases the profitability. Secondly, the increase in the non-performing loan erodes the interest income reducing the profitability & finally, as the asset size increases so do the bad management practices as there are huge operations to be handled by the bank, therefore hindering the profitability.

Keywords: Nonperforming loan; profitability; determinants.

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* Corresponding author.

1. Introduction

Banks play an important role in the development of a sound economy. Its main business is to furnish credits and advances and to act as depositories of public savings. It generates income by collecting interest on loans and interest or dividends payments from the securities they own. Loans, therefore, are the major output provided by the bank, but it is a risk output [25]. Hence, the bank usually wants it to be a performing one. The quality of credit determines the performance of the banks. For this reason, managing the credit risk should be given special emphasis, as the quality of credit risk management influences the success or failure of financial institutions [27]. Thus, the likelihood that banks will collapse if the monies they loan out are not paid back by borrowers is high [24].

Experiencing a high level of NPL may threaten the stability of the banking industry and the financial system as a whole [8]. As the NPL reveals the asset quality, it plays a critical role and acts as an indicator of the financial stability for the banks [30]. Importance must be given towards the management of credit risk on banks as it affects the financial intermediary role of commercial banks which is a core source of income to the banks and ultimately, the financial stability of an economy [19]. In this regards, NPL has drawn the attention of the regulators as well as the higher management of banks as usual. Every crisis follows reforms for achieving financial stability, but mostly agonizingly slow. The issue relating to non-performing loans affect all sectors of an economy, however, the sector that is most hit by this effect is the financial intuitions such as a commercial bank which has large loan portfolio [7]. The problem of high NPA in the BFI sector can interfere with progress on economic growth [9].

In 1988-90, in Benin, all three commercial banks collapsed, 80 percent of the bank's loans portfolio were nonperforming, and in Cameroon, nonperforming loans portfolio reached 60-70 percent in 1993 and five commercial banks were closed and three others were restructured [37]. The global financial crisis which originated in the US in 2007/08 was the result of the default of subprime mortgages [18]. In this context, it can be inferred why it is important to study the relationship between bank performance and non-performing loan. So a regular and proper monitoring of credits must be ensured and effective procedure be established for loan disbursement. As every sub-system is a part of a system, a small mistake on the loan disbursement process reflects its implication on the loan recovery process [20]. However, the disbursement of loans is not free from risk, as the bank can never be sure that borrowers will repay the loans within the agreed timespan. Loans are in fact life for banks, in contrast, the non-performing loan is death because the immediate consequence of a large amount of NPLs in the banking system is bank failure [13]. So for a bank to be successful in the long run, it must keep the level of bad loans at a minimum and if the NPL exceeds a certain threshold the bank's profitability suffers badly as it earns less money from its credit business. The occurrence of banking and financial crises is frequently allied with a massive accumulation of NPLs [11, 18, 31]. The issue relating to non-performing loan effect all sectors however the sector that is most hit by this effect is the financial intuitions such as a commercial bank which has a large loan portfolio [7]. NPLs are therefore a measure of the stability of the banking system, and thereby the financial stability of a country [12]. Preventing the occurrence of systematic banking problem is undoubtedly a major concern of policymaker [23].

The failure of banks in Nepal is also the result of the high non-performing assets and the result of lending without differentiating markets, products, and borrowers' creditworthiness and excessive loan exposure to real estate [33]. Past consequences of high NPL can be seen following the case of, Nepal Bank Limited and RBBL which nearly collapsed when the NPL reached over fifty percent and the net worth became negative by Rs 10 billion. The study findings will enable NRB to formulate policies for regulation and monitoring commercial banks 'credit risk management activities of Nepal. The main objectives are to explore the trend of the NPLs, examine the relationship between the bank-specific and macroeconomic variables with the NPL & to analyze the effect of the NPL on the profitability of joint venture banks. The study makes an attempt to answer four basic research question; (i) Are the bank-specific and macroeconomic variables related to NPL? (ii) Are the variables that are the determinants of the NPL related to the profitability of JV banks? (iii) How are the selected bank-specific and macroeconomic factors correlated with NPL? (iv) Do NPLs effect the profitability of the banks?

1.1 Limitation of the Study

The joint venture is only considered as the area of study out of the 28 commercial banks. There are many other factors that impact the profitability but only NPL and its determinants are considered. Furthermore, this study only covers the financial aspects and only secondary data is used for the analysis using only the data of 8 to 12 years for the sampled bank.

2. Literature Review

The purpose of the literature review is to gain an idea of the research that has been conducted earlier and the evidence that has been set so far. It helps in providing a foundation for developing of comprehensive theoretical framework and hypothesis for testing.

Reference [34] analysis on the relationship between several bank-specific factors and the non-performing loan ratio shows that capital adequacy ratio is negatively related but statistically insignificant. Nevertheless, a significant and a positive relation is seen to that of the capital adequacy ratio and non-performing loan in the findings of [4, 2, 29, 38]. The author of [2] shows an insignificant positive effect of capital adequacy ratio with the non-performing loan and negative and insignificant effect on the NPL with a growth rate of the gross domestic product. A positive and significant relationship of net interest margin with a non-performing loan [3, 26]. Loan to deposit ratio is positive and statistically insignificant with the non-performing loan as per the findings of [10]. On the other hand, the bank size has a negative relationship with a non-performing loan [26, 14, 30] whereas studies of [2, 18, 8, 5] find a positive and insignificant relation with the non-performing loan. Studies of [16, 26, 32, 11, 18, 29] show an empirical evidence of a significant negative relationship between growth in gross domestic product and non-performing loan. Additionally, [18] find an insignificant relation of inflation with the non-performing loan. In contrast [29] finds a positive and significant relationship of inflation with the non-performing loan. Not only are these various determinants of the non-performing loan, but also that these determinants affect the profitability of the banks.

A negative and a significant relationship between NPL and profitably [28, 6]. Moreover author [1] study shows NIM has a positive and a significant relationship with return on asset & return on equity Also study by author [35], where the sample is split into large and small banks reveals that the size of small bank is significantly positively related to profitability & that of large banks, the relationship is significant and negative. In contrast [21] shows a positive and insignificant relation between the bank sizes.

3. The Methodology

3.1 The Conceptual Model

This study is based on the assumptions made by [24] which uses a sample of 22 Ghanaian banks over the period 2005-2010. The study employs a fixed effect panel model in estimating three different empirical models. This study utilized both descriptive and regression analysis based on a panel data from 2006-2017. This would be better understood with the help of the schematic the model formation.
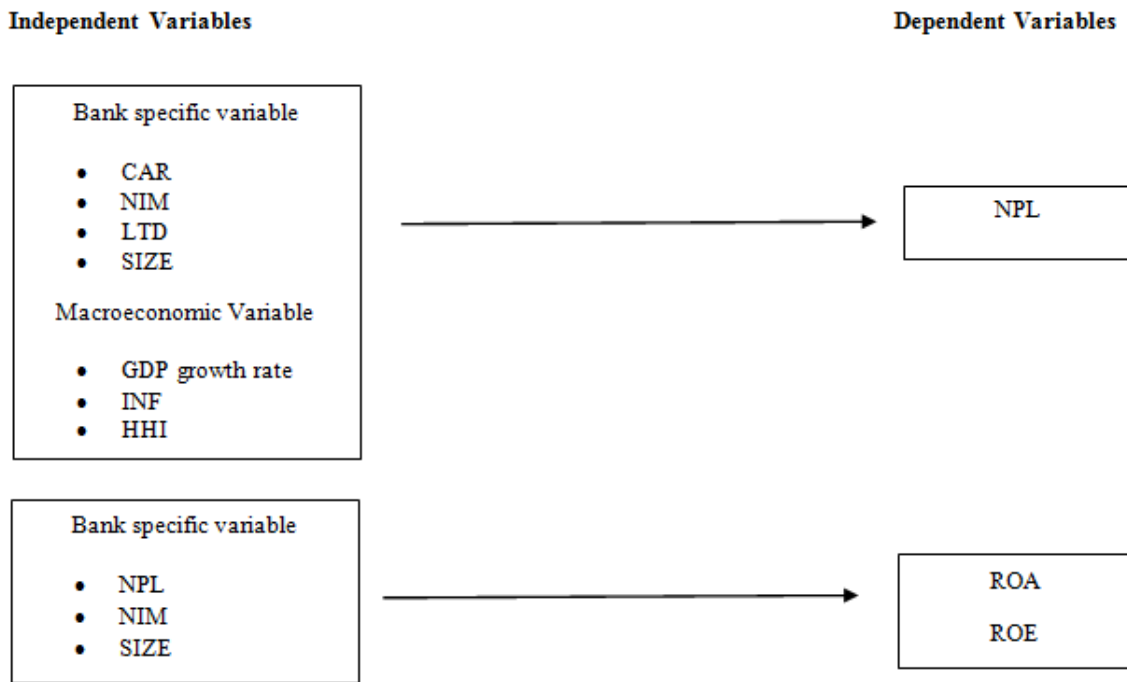

Figure 1

The study uses a panel data while estimating the relationship between determinants of NPL as well as its impact on profitability with the aid of an OLS model of joint venture banks of Nepal. The general form of the models is:

$$Y_{it}=\alpha+\beta X_{it}+\varepsilon_{it}$$

Where *i* is the cross-sectional dimension and *t* represents the time-series dimension, Y_{it} represents the dependent variable in the model & X_{it} contains the set of explanatory variables, α is the constant, β represents the coefficients and ε_{it} represents the random error term. The multiple regression equation thus formed is as follows:

$$NPL = \alpha_{it} + \beta_1 CAR_{i,t} + \beta_2 NIM_{i,t} + \beta_3 LTD_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 GDP_{i,t} + \beta_6 HHI_{i,t} + \beta_7 INF_{i,t} + \varepsilon_{i,t} \ldots \ldots \ldots i$$

$$ROA = \alpha_{it} + \beta_1 NPL_{i,t} + \beta_2 NIM_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots ii$$

$$ROE = \alpha_{it} + \beta_1 NPL_{i,t} + \beta_2 NIM_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots iii$$

Where,

NPL=Non performing loan, ROA= Return on Assets, ROE= Return on Equity, CAR= Capital Adequacy Ratio, NIM= Net Interest margin, LTD= Bank credit advance, SIZE= log of total asset, GDP=Gross domestic product growth rate, HHI= Herfindahl-Hirschman index (assets concentration of banking industry), INF=Inflation

3.2 The Data

Before the collection of any data, a sample design is a definite plan that helps to obtain a sample from a given population [22]. Accordingly, the study is confined to the seven joint ventures banks in the Nepalese banking sector. The NMB data is taken for just 9 years because of its transformation to a commercial bank in 2008 and the unavailability of the annual report of 2017. Similarly, NBBL data is taken for 8 years as the bank data shows highly deviating result. A secondary source of data is preferred because secondary data are the data that is already available i.e., data which have already been collected and analyzed by someone else [22]. The data is collected from the financial statements of the JV banks, banks supervision reports, and macroeconomic situations reports published by NRB. The bank-specific data are mainly obtained from the annual audited financial statement of JV banks and Nepal Rastra Bank publications. Further, data for macroeconomic variables i.e. GDP growth rate and inflation are extracted from the Economic survey report and macroeconomic situation report published by NRB.

The data collected from different sources is, checked and entered to simple excel program to make the data ready for analysis, then the collected data is processed and analyzed through SPSS version 20 software package. The results of the descriptive statistics such as mean, standard deviation, minimum and maximum values are presented to describe the nature of variables under investigation. The research uses a fixed effect regression model for the analysis purpose. Since the study requires to know the relationship between variables for which the hypothesis testing is done. Furthermore, the autocorrelation & multicollinearity test is done to decide whether the model used in the study is appropriate and to fulfill the assumption of the linear regression model.

In order to fulfill the objective of the study, the following hypothesis will be formulated:

- H_{01}: There is no significant relationship between X_i and NPL.
- H_{02}: There is no significant relationship between X_i, NPL, and ROA.
- H_{03}: There is no significant relationship between X_i, NPL, and ROE.

Where X_i= CAR, NIM, LTD, SIZE, GDP, HHI, inflation.

4. Result and discussion

4.1 Descriptive Statistics

The selected variables both dependent and independent are statistically observed and described in the following table.

Table 1: Descriptive Statistics of Variables

Particulars	Minimum	Maximum	Mean	Std. Deviation
CAR (%)	10.02	33.96	12.81	3.25
NIM (%)	0.94	5.51	3.27	0.78
LTD (%)	39.27	120.96	69.13	13.09
Size (in billion)	22.91	25.67	24.46	0.63
GDP (%)	0.01	6.94	4.00	1.70
INF (%)	5.10	12.60	8.58	1.93
HHI	90.66	205.08	146.59	28.87
NPL (%)	0.10	17.99	1.74	2.36
ROA (%)	0.00	8.15	1.98	1.01
ROE (%)	-6.13	47.87	21.75	8.38

Table 1 shows the summary of the descriptive statistics of variables taken into consideration for the study. The mean value of NPL 1.74 % is an indicator of quality loans. The NRB rule, states that a bank has to keep NPL below 5 percent of the total loans. The maximum value of this ratio is 17.99 % which incurred in 2067/68 for Nepal Bangladesh bank. The standard deviation of 2.36% also indicates that there isn't much variation among banks in credit risk exposures. The high NPL simply indicates the degradation of the quality of loans due to defaulters among the borrowers.

ROA ranges from 0.0% to 8.5%. The low ROA compared with the industry average indicates inefficient use of banks assets. It has a mean value of 1.98% showing the deviation of 1.01 % from its mean value. This indicates that joint venture banks earn 1.98% return on averages from the asset per year. Similarly, ROE ranges from -6.13% to 47.87%. The negative sign shows that shareholders are losing, rather than gaining, the value from their investment. Furthermore, the high ROE suggests that the banks have been increasing returns from the efficient allocation of funds and reducing expenses. But, the other reason for this may also be the decrease in shareholder equity which causes the ROE to go up. The decrease may be due to a large amount of the debt taken which artificially inflates the ROE. It has a mean value of 21.75% showing the deviation of 8.38 % from its mean value. This indicates that joint venture banks earn a 21.75% return on averages from the equity per year.

The minimum and maximum CAR are 10.2% and 33.96% respectively with a mean CAR and a standard deviation of 12.81% and 3.25% respectively. This indicates that CAR for the Joint venture banks in Nepal during the study period was above the minimum requirement, which is 11%. The NIM on an average is 3.2%

with the minimum at 0.94% and a maximum at 5.51%. The low NIM is the result of an increase in the non-performing assets, which fail to generate interest income and the increase in fundraising costs mainly due to shortage supply of funds relative to the demand for credits. This might be the case as the banks are mostly attracting the customer with a high deposit interest rate. The bank LTD ranges from 39.27% to 120.96% with a mean value and standard deviation of 69.13% and 13.09% respectively. The high value indicates that the rise in loan extensions compare to deposits is more. However, compared to the rule of NRB of that the loan to deposit ratio of banks should be below 80%, it shows that the joint venture bank is as per the prescribed rule. The high standard deviation shows that there is a huge difference between the LTD between the banks.

The total assets represent the productive capacity of a bank. The higher the total asset, the greater is the potential of income generation, holding all else equal. There has not much deviation in total assets and ranges from Rs.22.91 billion to Rs.25.67 billion. The average asset size is Rs.24.46 billion showing that there isn't a huge difference in terms of asset regarding the banks. The GDP growth rate ranges from 0.01% to 6.94% with a mean of 4% and a slight deviation. The lower GDP is widely accepted as the result of the blockade and the high is due to the rebound from the blockade. The inflation variation with a maximum of 12.60% is also due to the blockade and the low inflation shows a stable market growth. The minimum i.e. 90.66 HHI index in term of loans shows that it is a highly competitive market indicating that lending is diversified within the banking industry, and the maximum i.e. 205.08 shows that the market isn't concentrated as it is below 1000.

4.2 Correlational Analysis

Correlation analysis is one of the most widely used and reported statistical methods in summarizing medical and scientific research data. It is often useful to determine if a relationship exists between two different variables. If so, how significant or how strong is this association between the two variables? [36]

Table 2: Correlation among variables

	CAR	NIM	LTD	Size	GDP	INF	HHI	NPL	ROA	ROE
CAR	1									
NIM	-.454[**]	1								
LTD	.247[*]	-0.02	1							
Size	-.321[**]	0.188	-0.133	1						
GDP	0.159	0.036	0.059	-0.082	1					
INF	-0.156	0.047	-0.089	-0.076	-.361[**]	1				
HHI	0.101	-0.03	-0.05	-.691[**]	0.06	0.119	1			
NPL	-0.159	.311[**]	0.050	-.386[**]	-0.02	0.018	0.222	1		
ROA	-0.158	.578[**]	-0.124	0.0149	0.02	0.016	-0.04	-0.039	1	
ROE	-.314[**]	.571[**]	-.348[**]	0.168	-0.02	0.041	0.195	-.226[*]	.773[**]	1

Note: ** means significance at 0.01(two-tailed)

   * means significance at 0.05(two-tailed)

Table 4.2 shows the result of the correlational test. Firstly, NPL is significant and positively correlated with NIM whereas it insignificant and negatively related to bank size. A negative correlation of NPL with total assets states that the exposure of non-performing loans declines as more and more credits are furnished. However, a statistically positive correlation between NPL and NIM seems absurd. The reason for the positive correlation of NPL and NIM may be that the creditworthiness of the debtors deteriorated which increases the NPL, but there is a possibility for the debtors to borrow at higher lending rates, which contributes to the increase in the interest income resulting in the rise in NIM. This is similar to the findings of [29]. Similarly, the negative statistically significant relationship with the bank size is due to the fact that as the banks are bigger, so does the opportunity of diversification of risk thus reducing the NPL. Secondly, the correlation of ROA shows that NIM is significantly positively related with ROA as its value of 0.00 is less than the significance level of 0.01. The positive relation arises due to the fact that the increase in the interest income will add to the earning of the banks thus increasing the ROA. In brief, the meaning is that the increase or decrease in NIM will significantly increase or decrease the value of ROA.

The correlation of ROE depicts a significant relation with CAR NIM, LTD & NPL. There is a positive relationship with NIM, however, a negative relationship exists between CAR, LTD & NPL. The negative value of NPL is due to the fact that as it increases there will be a decrease in the interest income due to defaulters which reduce the profitability & negatively effecting ROE. This finding is similar to the study by [28, 17]. Likewise, the negative relation with CAR is due to the fact that the increase in capital adequacy might affect the JV ability to extend credit i.e. bank loans will be insufficient so as to cover this artificially high cost of capital, therefore decreasing bank-lending activities which decrease the earnings thus reducing the ROE. This inability can be referred to as the credit crunch which is the recent scenario on the Nepalese banking industry.

Correspondingly, the LTD shows a negative relation. Logically higher loan to deposit ratio indicates, that more of the deposit is issued in the form of interest-bearing loans, thus generating more profit. In contrast, the negative relation shows us that the increase in loans to deposits ratio also increases the liquidity risk exposure. Due to the liquidity exposure bank may not be unable to meet short-term financial demands consequently, the rise in the bank credit advance will have a negative influence on the profitability and hinder the performance of the bank. Subsequently, the NIM shows a positive relationship with ROE just like the case of ROA, the positive relation arises due to the fact of the increase in the interest income. This increase in the interest income adds to the earning of the banks thus increasing the return to the shareholders as the bank's profit would increase.

4.3 Multiple Regression Analysis

4.3.1 Analysis of factors affecting NPL

As per our study in model 1, we have analyzed the relationship between the dependent variable NPL with independent variables per our research objective. The values of variance inflation factor for the variables are in the range from 1.118 to 2.060 suggests that the regression model is free from the multi-Collinearity problem. The value of $R^2=0.351$ means that the selected bank variable will explain only 35.1% of the change in NPL whereas the rest 64.9% is accounted to other variables. The study used a Durbin-Watson test to determine the

autocorrelation of all variables, there is no autocorrelation in JV bank and selected bank internal variables since the value is near to 2. The output of the ANOVA analysis reveals that the significance level is 0.000 which is less than 0.05 concluding that there is a significant difference in the mean of the selected bank internal variables with NPL.

Table 3: Multivariate Regression Analysis on NPL

Particulars	B	t	Sig	VIF
(Constant)	63.187	4.150	0.000	
CAR	-0.143	-1.650	0.103	1.515
NIM	1.042	3.113	0.003	1.308
LTD	0.002	0.086	0.932	1.118
Size	-2.437	-4.461	0.000	2.274
GDP growth rate	-0.105	-0.717	0.476	1.195
Inflation	-0.104	-0.797	0.428	1.203
HHI	-0.015	-1.312	0.194	2.060
Significance level	0.05			
Adjusted R^2	0.351			
F	5.324			
P value	0.000			
D/W value	1.305			

The regression result indicates that the coefficient of CAR is negative with the significance of 0.103 thus the null hypothesis Ho_1 is accepted. The negative coefficient signifies that for 1 unit increase in CAR will decrease the NPL by 0.143 unit. The reason being, that in order to protect the bank against the various risk, it tends to reduce the risky asset i.e. NPL to increase the capital. Logically, this has to be true. However, this relationship is not statically significant i.e. CAR does not matter in determining NPL. The JV banks seem to have a minimum exposure to the credit risk in our study. It is similar to the finding of, [34] which is based on the similar assumption. Nevertheless, a significant and a positive relation is seen in the findings of [4, 2, 29, 38] which provides the argument that banks with the higher capital ratio, depend on their own capital to fund asset growth. This reduces dependency on expensive external funding capital and therefore leads to higher profitability.

The NIM shows a positive coefficient of 1.042 and also a significant relationship with NPL thus rejecting the hypothesis. The correlation also depicts the same results. However, this relation seems illogical due to the fact that the increase in the NPL would erode the interest income as there will be a large number of defaulters. Nonetheless, the positive coefficient is due to the fact that banks charge higher interest rates when loans are riskier thus the banks increase their interest margin to compensate for possible default risks. Thus the increase in the NIM increases the NPL. As the loans are the major source which adds to the interest income it is therefore an essential factor determining NPL has to be important. It is similar to the findings of [3, 26] where the study finds that banks could charge additional risk premiums to reimburse credit risk. The null hypothesis is rejected.

The estimated coefficient of LTD ratio is positive and statistically insignificant identical as the regression result thus accepting the hypothesis. The results indicate, as the loan to deposit ratio increases by 1 unit NPLs increases by 0.002%. This is because an extension of credit may not be a problem by itself, but such expansion can result in poor screening and the loan which may variably turn up to NPLs. The result is consistent with the findings of [10] regarding the positive relation, on the other hand, the study finds LTD to be statically significant. This is due to the fact that customer's deposits are mostly used for a loan which may variably turn up to NPLs. However, it isn't the case for the JV as the deposits are diversified into various sector thus making it insignificant.

On the other hand, the bank size shows a negative coefficient which indicates that 1 unit increase in the asset will decrease the NPL by the same in our case by 2.437. As the banks are bigger, so does the opportunity of diversification of risk thus reducing the NPL. The size also holds a significant relation with the NPL thus rejecting the hypothesis. This is similar to the findings of [26, 13, 30] where the larger banks have the ability to diversify risk. However, studies of [2, 18, 8, 5]) finds positive and insignificant relation and argue that the larger banks have quality resources and a better ability in the selection and diversification of credit. This is true because as the bank size increases so does its ability to give out a loan to the customers.

Similar, to the correlation, the study finds a negative but not statistically significant relationship between growth rate of GDP and the NPL thus accept the hypothesis. The result is due to the fact that higher positive GDP growth will increase the level of level of income which adds to the credibility of the borrower to pay its debts.Several empirical studies have found a negative and insignificant association between NPL and real GDP growth [32, 11, 16, 18]. The contribution of the financial sector to GDP was estimated to stand at 5.40 percent in the fiscal year 2016/17 which shows the situation of banks contribution towards the economy. Furthermore, the negative coefficient of inflation indicates that the income has increased in line with inflation, thus increasing the number of available funds for debt repayment. The results show the insignificant relation of inflation with NPL which is similar to the findings of [18] where the labor unions negotiated wages increases based on the inflation rate. This contradicts the findings of [29] where the study shows a positive and significant relationship of inflation with NPL which points out that the effect of higher interest rates due to inflation and declining economic conditions are might impact on borrower's debt servicing capacities. This argument holds true as inflation increases it hinders the ability of the customers to repay the interest and principle of loan due to the high-interest rate. It is not the same in our case because it seems that during the time of inflation the JV doesn't seem to increase the interest rates and also that the wages might have been increased as per the inflation rate basically, indexation of wages to inflation. The insignificant result shows us that we accept the null hypothesis.

Finally, the HHI index shows a negative and an insignificant relation with NPL, accepting the hypothesis. The descriptive statistics illustrate that the JV is a concentrated banking industry.

This signifies that most of the industry's lending is concentrated among few banks, enabling them to have access to more information on borrowers & after disbursing of the loan the loan has a minimum chance of being a nonperforming as there is less chance of adverse selection. Therefore as the HHI index increases, there is a decrease in NPL. This result also indicates that the joint venture bank have done an effective screening of the

borrowers.

4.3.2 Analysis of factors affecting ROA

As NPL is one of the major contributing factors that erodes profitability. The study, therefore, uses equation 2 to express the impact of NPL and its determinants on profitability.

Table 4: Multivariate Regression Analysis of ROA

Particulars	B	t	Sig.	VIF
(Constant)	9.692	2.503	0.15	
NPL	-.161	-3.585	0.001	1.432
NIM	.963	7.584	0.000	1.263
Asset size	-.432	-2.670	0.009	1.341
Significance level	0.05			
Adjusted R^2	.419			
F	19.239			
Sig.	0.000			
Durbin-Watson	1.736			

The result reveals a negative and significant relation between NPL and ROA which is in line with the expectation and that we reject the null hypothesis. As the NPL increases there will be a decrease in the interest income due to defaulters which makes the collection of the principal and interest on loans difficult thus reducing the ROA, similar to the study by [28, 17, 6] where the study finds a negative and a significant relationship between NPL and ROA. Likewise, the NIM is found to have a positive and significant relationship with ROA and that we reject the hypothesis. The increase in the NIM increases the ROA and in our case increase in NIM by 1 percent leads to an increase in ROAs by 0.963 percent. As interest rates rise, profitability on loans also seems to increase for the JV, as there is a greater spread between the interest earned and the interest paid. The JV banks made good decisions and were able to a profit on its investments this is evident as the NPL is the minimum NPL is 0.10 & the mean value of NPL of 1.74 % indicate that the average ratio of NPL over total Loan is less than 2% which is a good indicator of quality loans. This is the indicator of the rise in the interest income which increases the NIM ultimately rising the profit. The JV seems to be unaffected by the recent trend of increasing the interest given on the deposit. This shows they have higher efficiency in the mobilization of their assets. Finally, the bank size shows a negative coefficient and is statically significant. This insignificant relationship rejects the null hypothesis. This is in line with the expectation as the bank size increases, the economies of scale enhance profitability up to a point after which it experiences diseconomies of Scale. This diseconomies of scale arise from the difficulty of managing an increasingly large operation & the increase in the cost of the asset with a negative performance. The JV banks have used its size effectively and it has contributed to the profitability. A similar result is obtained by [35] where the sample is split into large and small banks. The

study reveals that the size of the small bank is significantly positively related to profitability & that of large banks, the relationship is significant and negative. In contrast [21] shows a positive and insignificant relation between the bank size and ROA as large size may result in economies of scale that will reduce the cost of operations.

In the case of VIF, the results are below 10, it suggests that there is no multicollinearity. The values of variance inflation factor for the variables are in the range from 1.432 to 1.263 for variables NIM, asset size, & NPL. The table also describes the summary of regression analysis with regards to the dependent variable return on assets. The value of adjusted R^2=0.419 means that the selected bank variable will explain only 41.9% of the change in ROA whereas the rest 58.1% is accounted to other variables. The study used a Durbin-Watson test to determine the autocorrelation of all variables. There is no autocorrelation in JV bank and selected bank internal variables since the value is near to 2. The output of the ANOVA reveals that the significance level is 0.000 which is less than 0.05 concluding that there is a significant difference in the mean of the selected bank internal variables with ROA.

4.3.3 Analysis of factors affecting ROE

As NPL is a major contributing factor that erodes the profitability the study uses equation 3 to express the impact of NPL and its determinants on profitability.

Table 4: Multivariate Regression Analysis of ROE

Particulars	B	t	Sig.	VIF
(Constant)	57.763	1.966	0.053	
NPL	-1.901	-5.592	0.000	1.432
NIM	8.253	8.565	0.000	1.263
Asset size	-2.441	-1.987	0.051	1.341
Significance level	0.05			
Adjusted R^2	.511			
F value	27.489			
P value	0.00			
D/W value	1.379			

The result reveals a negative and significant relation between NPL and ROE which is in line with the expectation. The insignificant relationship shows that the null hypothesis is rejected. As the NPL increases there will be a decrease in the interest income due to defaulters which makes the collection of the principal and interest on loans difficult thus reducing the ROA similar to the study by [28, 17, 6] where the study finds a negative and a significant relationship between NPL and ROE. Likewise, the NIM shows a positive coefficient of 8.253 and also a significant relationship with ROE similar to that of ROA. Finally, the bank size shows a negative coefficient and insignificant relation which indicates that as the bank size increases, the economies of scale enhance profitability up to a point after which it experiences diseconomies of Scale. This diseconomies of

scale arise from the difficulty of managing an increasingly large operation & the increase in the cost of an asset that results in a negative performance. This is similar to the findings of [1]. The values of variance inflation factor for the variables are in the range from 1.432 to 1.263 suggests that there is no multicollinearity. The value of adjusted R^2=0.511 means that the selected bank variable will explain only 51.1% of the change in ROE whereas the rest 48.9% is accounted to other variables. There is no autocorrelation in JV bank and selected bank internal variables since the value is near to 2. The output of the ANOVA reveals that the significance level is 0.000 which is less than 0.05 concluding that there is a significant difference in the mean of the selected bank internal variables with ROE.

5. Concluding Remarks

The results reveal that the NPL profile of JV banks has been improving and shows a decreasing trend. The ratio of nonperforming loan is gradually declining in past years. To further make this trend effective firstly, the JV banks should pay attention to the NIM. The uncertain nature of the asset quality is likely to cause an increase in the lending rates as a result giving rise to interest income even though there is an increase in the NPL. Not your part of the study. The increase in the NIM increases the profitability but it has its price. The study finds that this increase in NIM also contributes to the increase in NPL. So, the banks must pay attention regarding the way they earn a profit. Secondly, the large asset size results in the increase in problems of credit management, there may be a situation of adverse selection or moral hazards The study shows that the increase in size has reduced the ROA & ROE because the cost structure of operation increases (e.g. rise in the wages of labor, rent, asset prices) even though there is the opportunity for diversification reducing in the long run.. In addition, they must also be able to maintain a good loan-to-deposit ratio as the huge allocation of the deposit being converted to loans reduces the profitability due to the rise of liquidity exposure. The HHI index also has the same relation as the bank size. As the loan portfolio diverse there will a good return to the shareholders as the diverse loan portfolio earns than the required return through the interest income; on the other hand, this diversification hampers the assets as they will be difficult to monitor

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Reference

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