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Credit risk, Operational risk and financial performance of commercial banks in Nepal

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Abstract
The objective of the study is to examine the effect of credit risk and operational risk on the financial performance of the banks. To achieve this study, secondary data was collected from six commercial banks of Nepal covering the period of 2071/72 to 2078/79. This study used descriptive research design and causal comparative research design. The Pooled Ordinary Least Square was employed to evaluate the effect of capital adequacy ratio, non performing loan, loan loss provision, operating efficiency and bank leverage with banks performance which is measured by ROA. The study concluded that there is insignificant effect of capital adequacy ratio and non performing loan with financial performance where as this study confirmed the significant effect of loan loss provision, operating efficiency and bank leverage on financial performance. On the basis of findings it can be concluded that bank should concentrate on loan loss provision, should enhance the operating efficiency and banks leverage should be properly maintained in order to increase the financial performance of the commercial banks.

Keywords: Commercial, insolvency insolvency, approach

Introduction

A bank is a financial entity that accepts deposits from the public through various accounts and lends money to those in need in order to make a profit. It is a financial institution that facilitates the transfer of funds from one location to another. The ability of financial organizations, particularly commercial banks, to create money is critical in corporate operations. Commercial banks are the primary financial intermediaries in any economy, as well as the primary sources of loans to the private and public sectors (Ugirase, 2013) [21]. The primary goal of banks is to maximize profitability in all of their operating activities.

Profitability refers to a company's capacity to profit from all of its existing sources (Harahap, 2015) [12]. Financial performance, which is measured by net income and cash from operations, is a company's capacity to produce new resources from ongoing operations over a specific time period. Traditional measures and market-based measures can be used to categorize financial performance (Aktan & Bulut, 2008) [4]. A nation's outstanding financial stability can be shown in the banking sector's effective and excellent performance (Sufian & Chong, 2008) [20]. When conducting business, banks confront several risks, including credit risk, operating risk, interest rate risk, regulatory risk, market risk, liquidity risk, insolvency risk, and foreign exchange risk. Rather than avoiding risk, banking is about accepting and managing it.

Graham and Coyle (2000) [11], defined losses resulting from a credit customer's unwillingness or inability to make full and prompt payments are referred to as credit risk. Limited institutional capacity, inappropriate credit policies, fluctuating interest rates, poor management, inappropriate laws, low capital and liquidity levels, directed lending, massive bank licensing, poor loan underwriting, reckless lending, poor credit assessment, lack of non-executive directors, poor lending practices, government interference, and inadequate oversight are the main sources of credit risk. Credit risk management in financial organizations has become critical to their survival and growth. It is an organized approach to risk management that includes risk assessment, risk management techniques, and risk mitigation. Credit risk management solutions include shifting risk to third parties, avoiding risks, lowering the negative impact of risk, and accepting some or all of the repercussions of a certain risk (Afriyie & Akotey, 2013) [2]. Management of credit risk is essential for assessing and improving banks' profitability. Any financial institution's longterm viability depends on an efficient system that guarantees borrower repayment of loans, which was essential in addressing asymmetric information concerns and lowering the number of loan losses (Basel, 1999) [5]. Credit risk is by far the most critical risk that banks face, and the success of their business is more dependent on precise measurement and efficient management of this risk than on any other risk (Giesecke, 2004) [10].

The operational risks faced by the bank are those caused by insufficient and failing internal processes, human error, system failures, and/or external events that affect the bank's operations. Operational risk is distinct from other categories of risk in that it is unrelated to efforts to earn returns (Fahrul & Rusliati, 2016) [8]. According to the Basel Committee on Bank Supervision, there are seven types of operating risks: internal fraud resulting in losses due to the intention to disregard internal regulations; external fraud resulting in losses due to a third party's conduct with the intent of undermining and disregarding bank regulations. In diverse ways, operational risk affects all Financial Institutions' procedures and processes. Nonetheless, management takes into account organizational events caused by entities, procedures, structures, and external incidents. However, operational hazards do not have the same influence on the systems. The risk of operational risk is caused by the breakdown of the bank's internal operations, human error, technological system failure, or external challenges. Operating Expenses to Operating Income (BOPO) is a common study metric for operational hazards. The ability of bank management to balance operational expenditures and operating income is demonstrated by BOPO. Operational efficiency highlights that efficiency is obtained when transactions are carried out with the lowest possible transaction costs. The banking industry is one that faces a variety of hazards when carrying out its activities. The banking industry's operations generate operating costs, generate operational profits, and involve assets in the process (Adam, Safitri, & Wahyudi, 2018) [1]. Effective operational risk management will also assist banks in identifying all of the risks to which they are exposed, including those for which they lack the expertise or experience to manage, allowing them to put frameworks in place to reduce such risks and the associated impact if they crystallize, making them less vulnerable to systemic problems (Cristina, Teodora, & Nicoleta, 2008) [6].

Statement of the problem

The influence of credit risk and operational risk on the financial performance of Nepalese commercial banks has not been thoroughly examined. Very few research studies that incorporated both credit and operational risk to examine the influence of credit and operational risk on financial performance have been conducted in other nations, but this is uncommon in the context of Nepal.

Objectives

Every research is conducted with certain objectives. In this regard the specific objectives of this study are as follows:

- To analyze the effect of credit risk management on the financial performance of commercial bank in Nepal.
- To assess the effect of operational risk on the financial performance of bank in Nepalese context.

Limitations

The limitations of this study are as follows:

- This study is based on only six Commercial Banks of Nepal; Global IME Bank, Nabil Bank, Standard Chartered Bank, Prime Commercial Bank Ltd, NMB Bank, and Everest Bank Ltd.
- This study will cover time period of Fiscal Year 2071/2072 to 2078/2079.
- Only secondary data are used.
- For analysis, only a few financial and statistical techniques are used.

Literature Review

In the context of the structural equation model (SEM), this study examined the impact of credit and operational risk on the financial performance of universal banks. Data were obtained from all 24 universal banks in Ghana without missing variables, and using the PLS-SEM, the results revealed that credit risk has a negative impact on financial performance. It was also discovered that operational risk has a detrimental impact on the financial performance of Ghana's universal banks. Furthermore, the study found that bank-specific variables (asset quality, bank leverage, cost-to-income ratio, and liquidity) had a substantial impact on credit risk, operational risk, and the financial performance of universal banks (Gadzo, Kportorgbi, & Gatsi, 2019) [9].

This study looked at the impact of credit risk and operational risk on the financial performance of Tanzanian commercial banks. From 2006 to 2019, the study used an explanatory research design with just secondary panel data. The data from 41 commercial banks, totaling 264 observations, was evaluated. The results reveal that LTDR, LADLR, and EXCHR had a considerable beneficial influence on ROA and ROE. Furthermore, there was a negative significant association between bank performance and OER, CIR, PCL, LGR, and GDP growth rate. NPLR, CAR, and inflation rate, on the other hand, were not statistically significant with regard to bank performance. According to the semi structural modeling results, both operational risk and credit risk have a negative impact on bank performance. According to the study, commercial banks confront significant risk in the lending sector, although profit tends to increase as risk increases (Mrindoko, 2021) [16].

Credit risk management in the banking sector is critical not just because of the current Global Financial Crisis (GFC), but also because of its increased impact on bank financial performance, growth, and survival. The purpose of this research is to look into the impact of credit risk management on the profitability of Nepalese commercial banks. Data from five commercial banks were collected and analyzed using correlation and multiple regression analysis from 2011 to 2021. Return on asset (ROA) and earnings per share (EPS) were utilized as bank profitability indicators in the model formulation, while nonperforming loan ratio (NPL), capital adequacy ratio (CAR), and credit to deposit ratio (CDR) were employed as credit risk management indicators. According to the report, there is a considerable association between NPL and CAR and commercial bank profitability. Similarly, there is no substantial association between CDR and commercial bank profitability. Since integrating all sample data into one, it was discovered that the total influence of NPLR and CAR had a negative effect on ROA and EPS (Parajuli, 2023) [17].

This study intends to examine the influence of operational risk management methods on the financial performance of selected mainstream commercial banks in Cameroon based on this premise. The study revealed that internal operational risk management practices, risk monitoring and control, and training and reporting have significant positive impact on financial performance. This study opined that financial performance increases with the implementation of internal operational risk management strategies. Furthermore, risk monitoring and control have significant mediating impact between training and reporting and financial performance (Isoh & Nchang, 2020) [13].

A study that investigated the impact of operational risk management strategies on the financial performance of Nigerian commercial banks was relied on secondary data gathered from audited financial statements of selected commercial banks in Nigeria over a 10-year period (2008-2017). The Linear Multiple Regression Model was used to analyze the data. According to the data, there is a positive association between operational risk management strategies and bank financial performance (Fadun & Oye, 2020) [7].

The banking sector is very important in any economy, considering its basic function of which is to relocate funds from agents with surplus to those with deficit. The study, which was a census survey, employed secondary data that was easily accessible from the Bank of Tanzania and all the commercial banks. The study used a descriptive analysis of Tanzania's commercial banks. To determine how operational risk management affected a commercial bank's financial performance, regression analysis was used. Credit risk, insolvency risk, and operational efficiency as typically provided by the bank of Tanzania are the variables used in

this study. The financial performance of Tanzania's commercial banks served as the study's dependent variable, and it was assessed using the return on assets as a percentage. The study found that operation risk management has a favorable impact of Tanzanian commercial banks' returns (Lyambiko, 2015) [15].
To examine the influence of credit risk management on the financial performance of Ugandan commercial banks from 2006 to 2015 using panel data from a sample of 20 commercial banks. As credit risk measures, the study uses return on assets as a dependent variable and nonperforming loans, increase in interest revenues, and loan loss provisions to total loans as dependent variables. Secondary data is derived from the Bank scope database, the African Development Bank, and the Ugandan Central Bank. Descriptive statistics, regressions, and correlation analysis are used in the study. Regression models will be used to determine the size of the impact of credit risk management on the performance of Ugandan commercial banks. According to the findings of the study, credit risk management has an impact on the performance of Ugandan commercial banks. The findings showed that nonperforming loans had an adverse effect on bank performance, potentially exposing them to enormous amounts of illiquidity and financial disaster (Serwadda, 2018) [19].
Credit risk management can be considered the heart of any commercial bank. It is critical to a financial institution's performance since it evaluates borrowers' creditworthiness. The impact of credit risk management on the profitability and survival of Iranian banks was studied. For this reason, the model was estimated using the panel data approach using bank financial statements from 2005 to 2016. The study's findings revealed a significant association between risk management and profitability, as well as bank survivability. Poor credit risk management decreases bank profitability and survival (Ahmadyan, 2018) [3].
The purpose of this study was to examine the relationship between credit risk management determinants reflected by banking soundness index indicators-CAMEL (Capital adequacy, Assets quality, Management efficiency, Earnings, Liquidity) and financial performance of state commercial banks in Sri Lanka. Using multiple OLS regression to analyze the data, the study found that there is a strong impact of the CAMEL components on the financial performance of State commercial banks in Sri Lanka. More specially found that capital adequacy, asset quality, management efficiency and liquidity have negative relationship with financial performance (ROE) whereas earnings have a strong positive relationship with financial performance (Perinpanathan & Vijeyaratnam, 2015) [18].

Conceptual Framework and Hypothesis
It depicts the logical link of dependent and independent variables. However, it is not completely dependent on one theory. Some variables are drawn from one theory, while others are drawn from different theories. On the basis of the context, one can also create new variables.

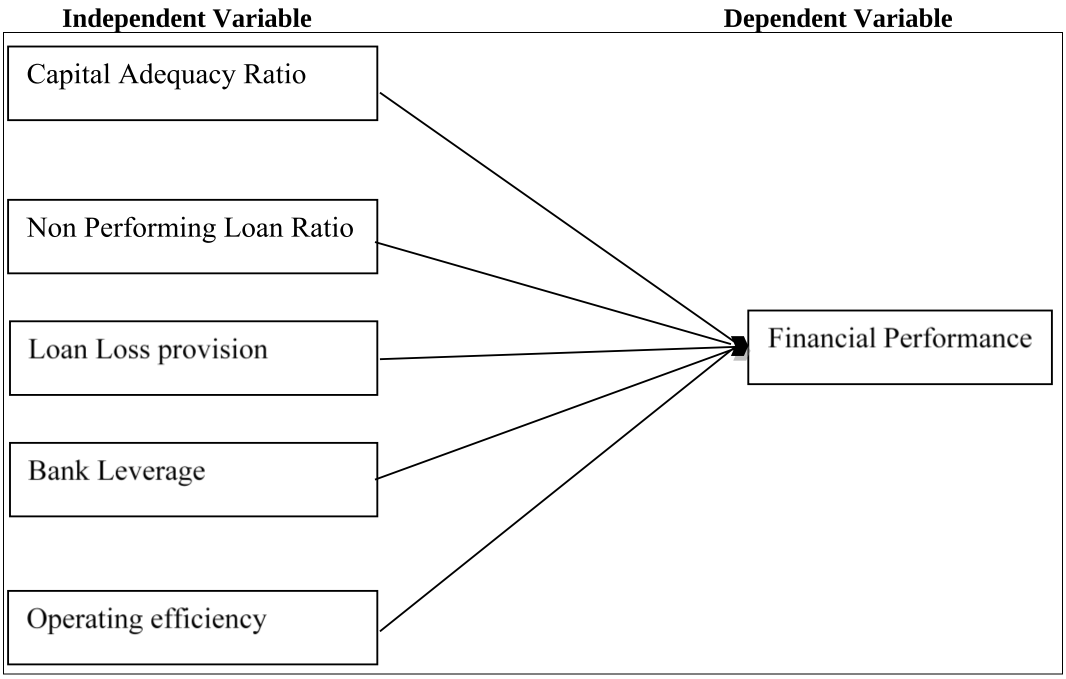


Fig 1

Research Methodology
Based on the above conceptual Framework following Hypothesis should be developed H1: There is significant effect of Capital Adequacy Ratio on Financial Performance.
H2: There is significant effect of Non Performing Loan Ratio on Financial Performance.

H3: There is significant effect of Loan loss provision on Financial Performance.

H4: There is significant effect of Operating efficiency on Financial Performance.

H5: There is significant effect of Bank Leverage on Financial Performance.

Research Methods
The descriptive and causal comparative research design was employed in this study to address concerns related to profitability linked with commercial banks operating in

Nepal. According to the NRB, there are 21 commercial banks in Nepal; however, only six of them (Nabil Bank, Standard Chartered Bank, Global IME Bank, NMB Bank, Everest Bank, and Prime Commercial Bank) were chosen as samples. As a result, total 48 observations from six commercial banks were used for the analysis, over eight years from 2071/72 to 2078/79. The total study is based on secondary data sources and the data has been taken from the annual financial reports. In this study, descriptive and inferential statistics tools are used.

Model

The regression model will used to investigate the effect of independent variables on dependent variable. The model specification for this study is as follows:

$$ROA_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 NPL_{it} + \beta_3 LLP_{it} + \beta_4 OE_{it} + \beta_5 BL_{it} + e_{it}$$

Where,
CAR = Capital adequacy ratio
NPL = Non performing loan
LLP = Loan loss provision
OE = Operating Efficiency
BL = Bank Leverage ROA = Return on assets α = Constant
e = error term i = entity t = time period
β1, β2, β3, β4, β5 = Beta Coefficient

Findings

Descriptive Statistics

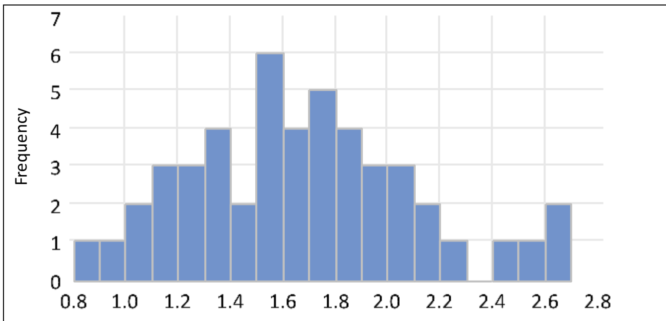
In this section, the descriptive statistics of the study variables are presented.

Table 1: Descriptive Statistics

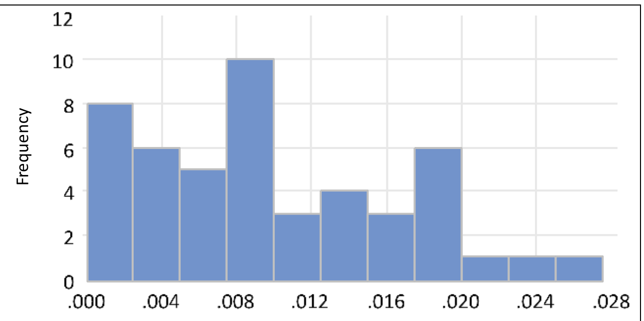
	Mean	Median	Maximum	Minimum	Std. Dev	Normality (value)
ROA	1.7109	1.6882	2.6105	0.8367	0.3890	0.8649
CAR	0.1346	0.1303	0.1969	0.1098	0.0195	0.0001
LLP	1.27 billion	1.26 Billion	4.00 Billion	.279 billion	.743 billion	0.0000
NPL	0.0090	0.0083	0.0223	0.0012	0.0059	0.2348
OE	36.1898	36.8235	49.4728	22.4408	5.8903	0.8100

Table 1 shows the descriptive statistics of the variables used in the study for the period 2071/72 to 2078/79. The average profitability (ROA) in Nepali commercial banks was 1.7109 which ranges from minimum 0.8367 to maximum 2.6105 with standard deviation 0.3890%. The minimum and maximum value of capital adequacy ratio was 13.46% and 19.69% respectively, with standard deviation of 1.95%. The average loan loss provision is 1.27 billion, the minimum and maximum value was 0.279 billion to 4 billion with standard deviation of 0.743 billion. The average non-performing assets of Nepalese commercial banks during the period of 2071/72 to 2078/79 is 0.09%, the minimum value was 0.12% whereas maximum was 2.23% with standard deviation of 0.05. The average operating efficiency during the study period was 36.1898%, minimum was 22.4408% and 49.4728% with standard deviation of 5.8903%.

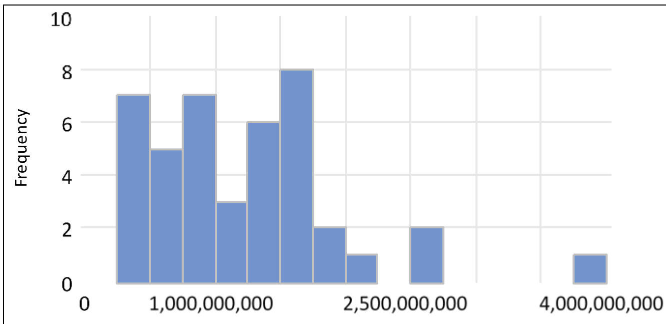
Normality test of Individual Variable



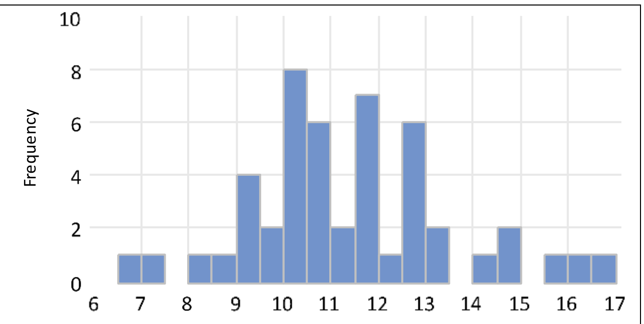
ROA



NPL



LLP



BL

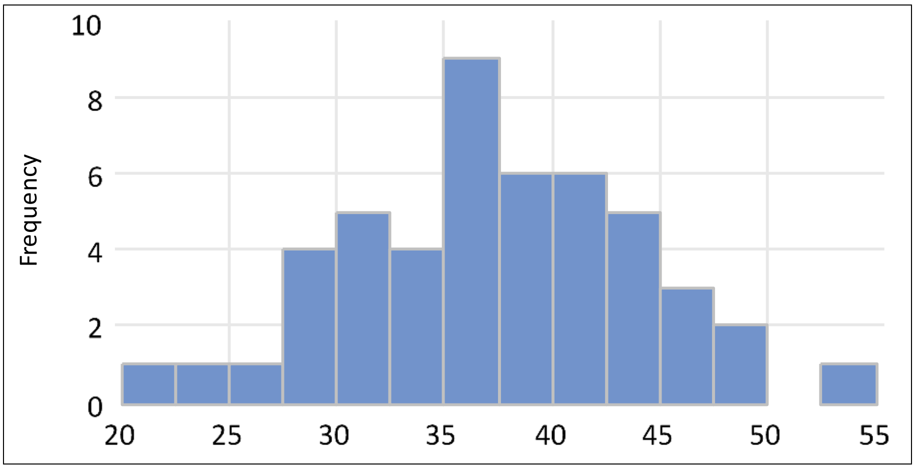


Fig 2: Normality test of Individual Variable

The figure 1 presents the normality test of independent variables of the study. As visualized in the figure, the data are seems to be normally distributed.

Model Test

Table 2: Lagrange Multlier Tests for Random Effect Null Hypothesis: POLS is better than fixed or Random effect model

Cross Section	Time	Both
0.560794	0.205145	0.765939
(0.4539)	(0.6506)	(0.3815)

Note: Number in the parantheses indicate p- value

The POLS method was used to analyze the result of the panel data. The POLS method of analysis was found to be appropriate as the P value of Breuch Pagan LM test is 0.4539 which is greater than 0.05, supporting null hypothesis POLS is better than fixed or Random effect model. Which is depicted by the following table.

Regression Result

In order to analyze the effect of credit risk management and operational risk management on financial performance of selected bank, POLS method is used. The summary of the POLS method is shown in the following table.

Table 3: Regression Result of Pooled Ordinary Least Square Method

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.908398	0.365156	7.964820	0.0000
CAR	-2.973684	3.148946	-0.944343	0.3517
NPL	-9.907476	6.8666240	-1.442926	0.1582
LLP	-1.81 E-10	6.56 E-11	-2.754997	0.0094
OE	-0.040071	0.007294	-5.493473	0.0000
BL	0.086250	0.030719	2.807707	0.0082
R Square	0.720071			
F- Statistic	17.49190			
Prob (F-statistic)	0.000000			
Durbin- Watson Stats	1.559724			

The table 3 presents the results of regression analysis. The p value of the overall model is
0.000 which is less than 5% level of significance; it indicates that the model is significant. The value of R^2 is 0.72 which implies 72% variation in dependent variable is explained by independent variable and remaining 28% was due to other variables which are not considered in this study.

H1: There is significant effect of capital Adequacy Ratio on Financial Performance.

The result revels no statistically significance effect of CAR on ROA because the P value is 0.3517 which is greater than 0.05. So, we reject alternative hypothesis.

H2: There is significant effect of Non Performing Loan Ratio on Financial Performance.

According to the results of the regression analysis, there is insignificant effect of non performing loan on financial performance, as the p value is 0.1582 which is greater than 0.05.

H3: There is significant effect of Loan loss provision on Financial Performance

As per the results of regression analysis there was significant effect of loan loss provision on financial performance as indicated by the P-value 0.0094 which is less than 0.05. The results supports the hypothesis.

H4: There is significant effect of Operating efficiency on Financial Performance.

The table 4.2 shows that there was significant effect of operating efficiency on financial performance, as the p value is 0.0000 which is less than the 5% level of significance.

H5: There is significant effect of Bank Leverage on Financial Performance.

From the above result of regression analysis, we found that there is statistically significance effect of bank leverage on financial performance because the P value is 0.
0082 which is less than 0.05. So, it supports alternative hypothesis.

Residual Diagnostic Test

In order to test the normality of the residuals, Jarque –Bera normality test was used. The normality test of the residual is depicted in the following figure

H_0: The Distribution is normal

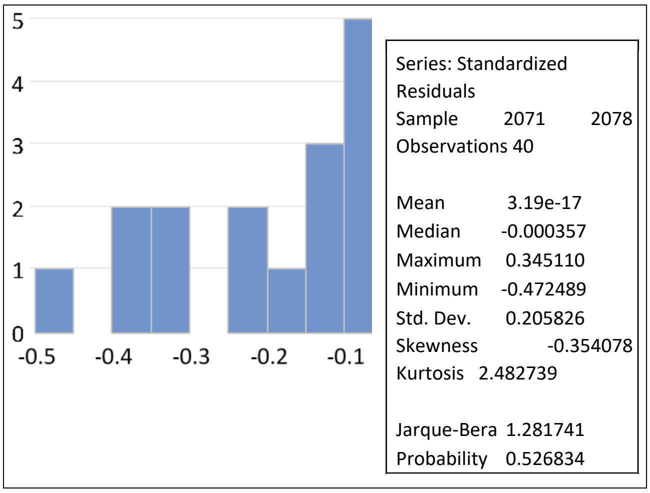
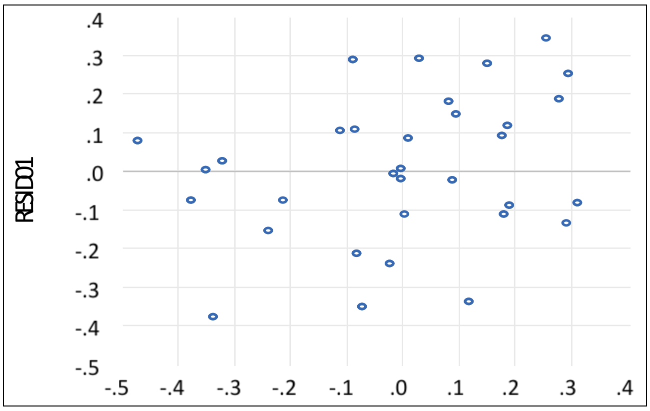


Fig 3: Test of Normality

The figure 2 presents the normality test of the residuals. The p value of Jarque-Bera is 0.526834 which is greater than 0.05, it leads to acceptance of null hypothesis. Hence, the given data set is normal.

Autocorrelation

Autocorrelation is a statistical concept, is also known as serial correlation. It refers to the degree of correlation of the same variables between two successive time intervals. Autocorrelation measures the relationship between variables current value and its past values. An autocorrelation of +1 represents perfect positive correlations, while an autocorrelation of -1 represents a perfect negative correlation.



Resid01(-1)

Fig 4: Autocorrelation test

Figure 3 shows the result of autocorrelation and it shows the error term randomly distributed indicating no autocorrelation. The result is further validated by DW test.

Hetroskedasticity

The white test for hateroskedasticity indicated the error term is homoskedasticity which validates the assumption of regression.

Conclusion

This study was conducted to investigate the effect of credit risk and operational risk on the financial performance of Nepalese commercial banks. The study reveals that there is no statistically significance relationship of capital adequacy ratio and non performing loan with financial performance. Which implies that in order to increase the profitability of the bank, the bank should not heavily rely on maintaining capital adequacy and non performing loan. The study concluded that loan loss provision, operating efficiency and bank leverage affects significantly firms' performance as the result is statistically significant. On the basis of the result it can be concluded that commercial bank should focus on loan loss provision, operating efficiency and bank leverage in order to increase its financial performance in terms of ROA.

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