



plays a fundamental role as it reflects the efficiency of credit allocation process and the profitability of the bank (Maudos and Guevara, 2004). Commercial bank is the critical part of financial system in the growth and the development of economic sector of a nation (Dhanabhakyaam & Kavitha, 2012). Banks are using different strategies for maximizing their profitability. In this process commercial banks promote investment by financing productive business opportunities, mobilizing saving, efficiently allocation of resources and makes trade of goods and services easy (Khrawish, 2011). It is necessary to know the factors that affect the profitability of the bank. This enhances great achievement in bank profitability and efficiency.

A well-managed and profitable bank is able to promote economic growth and revive economic downturn of the country (Karim, Jamal & Hamidi, 2012). It is highly essential for banks to maintain profitable growth so that it can ensure the safety and soundness of financial system (Ramlall, 2009). Economies that have a profitable banking sector are better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou, Brissimis, & Delis, 2006). The profitability of a bank is a major concerned because it measures the ability of bank to better withstand negative shocks and contribute to the stability of the system. Bank must earn profit to survive. There is no incentive for bank to conduct a business without profit. Profitability plays an important role in the structure and development of bank because it measures the performance and success of a bank.

Profitability is a measure of firm's efficiency (Khan & Jain, 1998). It is also a control measure of the earning power of firms as well as well as bank's operation efficiency. Weston & Copeland (1998) described profitability as net result of a large number of policies and decisions. Profitability is also an indicator of bank's competitive position and a measure of firm's efficiency. It reflects the quality of management. Banks constantly change their strategies to improve the profitability. In recent time managers, investors and analysts have raised considerable interest on the factors that determines the bank profitability. At the macro level, a sound and profitability banking sector is necessary to survive from negative shocks and contribute to the stability of the financial system.

Credit risk occurs as a result of the refusal of one party to deliver his or her duties. The development of different kinds of counterparties, ranging from individuals to sovereign governments and the new forms of obligations has stressed on the reason why credit risk management is on top in terms of actions laid down for the benefits of managing risk in

the banks, The management of risk has become the order of the day because banks are financially incapacitated to take in more loan losses (Boffey and Robson, 1995), Banks face too many serious problems due to unsuccessful credit risk management but the credit lending remains the chief activity of the banking sector throughout the world. The core cause behind it that banks can no longer survive without this activity. This is the reason that credit worth is considered as a key sign of financial health and soundness of financial institutions particularly the banks. The interests charged by the banks on advances and loans shape large part of the bank's assets and delays and defaults of credits and advances create solemn circumstances for both the lenders and borrowers and even the whole economy can be disturbed as evident in the 2008 financial crisis. Different studies in the context of banking crises across the world uncover the fact that poor credits (asset quality) are the primary cause of failure of the banks. Stuart indicates that the ratio of non-performing loans (bad loans) all around the world was extremely high between 1999 and 2009 in commercial banking sector. And this was due to a number of reasons such as absence or inadequate loan collaterals, poor loan processing, ineffective credit risks management, excessive intervention during loan lending procedure, and several negative impacts on bank profitability.

Therefore, by considering the importance of credits in the banking sector and their severe economic impact, it is extremely important to find the relation and impact of credit with/on profitability of the bank. The banking theory points out 6 major risks associated with the credit policy of banks. These risks are: credit risk (or repayment risk), credit deficiency risk, operating risk, portfolio risk, interest risk, and trade union risk. However, credit risk is the most vital risk among them and thus, it requires special awareness and concentration. Hence, a sincere attempt is made in this dissertation to make the modest contribution to the credit risk literature by analyzing the impact on UK banking sector with particular focus on five big UK commercial banks including HSBC, Barclays, Royal Bank of Scotland, Lloyds Banking Group, and Standards Chartered Bank.

Nepalese banking industry has become more competitive since 1980's after the government permitted the entry of foreign commercial bank and more private commercial banks were established within the country (NRB, 2012). The foreign commercial bank did not only bring more capital in the economy but also bring experience and expertise with them which has increase competitiveness in the industry. Nepalese commercial bank has been operated in a very competitive environment. The intense competition within the

industry has affected its ability to earn profit. It has challenged the financial sector stability and growth. Recently NRB has issued a directive to increase paid up capital of commercial bank. Thus, concentration within the industry is another factor affecting the banking profitability and its effect on Nepalese commercial is unidentified. Bank interest rates, both on deposits and loan, are determined in two ways: legislative determined and market determined. Before the economic liberalization, NRB used to determine the interest rate for all commercial banks. But after the liberalization, it is deregulated. It is now determined by the commercial banks through market forces. As Interest rates are deregulated and banks are free to set their own deposit and lending rates. The ministry of finance has imposed a rule on banks limiting the maximum spread between borrowing and lending rates to 5% at the most. At present according to economic bulletin (2017/18), interest rate on deposit ranges from as low as 1 percent to as high as 20 percent. Similarly, interest rate on loan ranges from as low as 2 percent to as high as 21,5 percent. This shows varying level of spread among banks. There are many determinants on such a wide range of difference in interest rate offered by various commercial Banks. Thus, the study is devoted to exploring the impact of credit risk on banks' profitability.

### **Problem Statement**

Understanding the credit risk is very crucial for determining the bank's profitability. It serves as an indicator of efficiency in the financial sector and reflects the cost of intermediation that the bank incurs. Researchers have been conducted in the quest of finding the credit risk management. In Nepal, there are few studies regarding credit risk management.

For instance; Bhattarai (2015) has examined the effect of credit risk on performance of Nepalese commercial banks. The pooled data of 14 commercial banks for the period 2010 to 2015 have been analyzed using regression model. The regression results revealed that 'nonperforming loan ratio' has negative effect on bank performance whereas 'cost per loan assets' has positive effect on bank performance. In addition to credit risk indicators, bank size has positive effect on bank performance. Capital adequacy ratio and cash reserve are not considered as the influencing variables on bank performance. This study concludes that there is significant relationship between bank performance and credit risk indicators.

Most of the Nepalese commercial banks are found to approve the loans that are not well examined. This may lead to increase the loan defaults and non-performing loans. Thus, the existing procedures for credit risk management are not adequate to compete with the existing financial and economic challenges in Nepal. There is need to investigate whether this investment in credit risk management is viable to the banks. This study therefore seeks to investigate the impact of credit risk indicators on a bank's financial performance in Nepal.

This study addresses how credit risk affects banks' financial performance taking sample as whole commercial banks and the findings would serve as the basis to provide policy measures useful to the various authorities on how to tackle the effect of credit risk in order to enhance the quality of banks' risky assets. From last two decades, hundreds of research is being conducted in this issue but the results of the researches are still contradictory with each other. Some research concluded that bank specific variables and credit risk plays significant role in bank's profitability whereas some concluded insignificant and some founds bank specific and credit risks to have negative relation with profitability. However the degree of the impact is different in different countries. This study addresses how credit risk affects banks' financial performance and the findings would serve as the basis to provide policy measures useful to the various authorities on how to tackle the effect of credit risk in order to enhance the quality of banks' risky assets. Thus this study intends to describe the following main question in the context of Nepal. The present study attempts to deal with following issues:

- What is the relationship between non-performing loan ratio, cash reserve ratio, dividend payout ratio, capital adequacy ratio and profitability of BOK and NIBL?
- What are the relationship between GDP growth rate, inflation and profitability of BOK and NIBL?

### **Objectives of the Study**

The general objective of the study is to examine the impact of credit risks on profitability of Nepalese commercial banks.

The specific objectives of the study are as follows:

- To examine the relationship between non-performing loan ratio, cash reserve ratio, dividend payout ratio, capital adequacy ratio and profitability of BOK and NIBL.

- To examine the relationship between GDP growth rate, inflation and profitability of BOK and NIBL.

### **Research Hypothesis**

The following hypothesis have been formulated and tested for empirical verification. Based on theoretical predictions, hypotheses are written as follows:

**H01:** There is no significant relationship between cash reserve ratio and ROA.

**H02:** There is no significant relationship between non-performing loan ratio and ROA.

**H03:** There is no significant relationship between capital adequacy ratio and ROA.

**H04:** There is no significant relationship between dividend payout ratio and ROA.

**H05:** There is no significant relationship between GDP growth rate and ROA.

**H06:** There is no significant relationship between inflation and ROA.

### **Significance of the Study**

Credit risk is one of the significant risks faced by banks and financial institutions and it has higher influence in the performance of banks and financial institutions. Therefore, credit risk management is an important area of banks that should be considered in order to reduce or minimize the default rate of customers and help banks to prosper as top bank generating higher loans. Credit risk has been foremost variable for banks letdown. A few BFIs went into liquidation whereas a number of BFIs have been facing prompt corrective actions due to erosion of capital on account of Credit Risks and Operational Risks (Nepal Banking Institute, 2015). Therefore, the primary significance of this study is to ascertain the impact of credit risks on profitability of commercial Banks. The result obtained so far on this issue in different countries of the world and Nepal is controversial. The research finding can help to analyze the factors that provide basis for determining profitability after credit risk management of commercial bank in Nepal. The research findings will also be useful to academia by assisting lecturers, students, instructors and other future researchers to approach the subject matter with deeper understanding as well as serving as a source of reference.

### **Limitations of the Study**

The major limitations of this study are as follows:

- The study has incorporated only six independent variables, the horizon of the study could be increased by increasing the number of independent variables like gross domestic product growth rate, money power, management quality, credit risk etc. and only two variable ie. ROA and ROE has been taken as a proxy of profitability.
- This paper has taken secondary data from the official source of Nepal Rastra Bank. Thus, the findings of this paper depend on the consistency of the data.
- Generalization of this study can be made only in Nepal not applicable for other countries because the other countries are contextually different from Nepal from the economic perspective.

## **Chapter II**

### **Literature Review**

Credit risk plays an important role on banks' profitability since a large chunk of banks' revenue accrues from loans from which interest is derived. However, credit risk may be a serious threat to the performance of banks. Therefore various researchers have examined the impact of credit risk on banks in varying dimensions.

#### **Conceptual Review**

The theoretical review about credit risk management cope with credit risk transfer (CRT), credit portfolio modeling (CPM) and advance credit management (ACM) and it have been review under as follows;

#### **Credit Risk Transfer**

Partony and Skeel (2006) stated 'Credit derivatives encourage banks to lend more than they otherwise would, at lower rates, to riskier borrowers. Banks with credit derivatives lack incentive to keep a close watch on borrowers. Because credit derivatives leave borrowers unmonitored, they fuel the credit expansion. And, as Charles Kindle Berger, the late financial historian, noted, unmonitored expansion of credit precipitates the manias that lead to market panics and crashes. Lewis (2006) stated 'Banks have every incentive to follow client performance closely even when they have hedged a loan. If a bank were to gain a reputation for being a poor underwriter. Its access to liquidity would be quickly withdrawn by the market.

Recent innovations in credit derivatives markets have improved lenders' abilities to transfer credit risk to other institutions while maintaining relationships with borrowers. Single name products such as credit default swaps (CDS) allow lenders to insure themselves against default loss, although such products are only traded for a relatively small number of large high-profile borrowers with low information asymmetry. However, banks can securitize portfolio credit risk through collateralized loan obligations (CLO) allowing them to sell credit risk originating from smaller, relationship borrowers where information asymmetries may have hitherto prevented risk. First, lender moral hazard may occur when the lender purchases credit protection against the wishes of the borrower or



without informing the borrower. The purchase of credit protection may send a negative signal about the quality of the borrower (Dahiya, Puri and Saunders, 2001).

Second, borrower moral hazard may result. In the absence of credit risk transfer markets, lenders will monitor borrowers and force them to choose and continue to run first-best projects. This bank certification' signals the borrower's quality to the market, allowing the borrower to combine more costly loan finance with cheaper bond finance. If the borrower's equity is traded, the signal should also increase the stock price (James, 1987). However, when credit risk transfer instruments exist, reduced bank monitoring by insured lenders will reduce the value of bank certification. The second tool is called credit risk transfer (CRT). It costs CRT to implement A bank originally has a balance sheet total of 2, it can grant two loans. With CRT, it can sell a fraction of these loans, and use the receipts to grant new loans. One could think of the securitization of loans, or the use of credit derivatives in order to recycle regulatory capital. Let us assume, however, that this process cannot be driven ad infinitum. For concreteness, assume that the bank sells 50% of each loan, and grants two more loans, of which again it sells 50%. The balance sheet total is then again 2. The same allocation would be obtained from initially granting two loans, then securitizing and selling 50% of each, and then using the receipts to buy securitized loans from another bank. CRT is thus a way to diversify.

The bank has access to three risk management tools. First of all, some risk management is mandatory. Because we are interested in the banks choice between risk management tools, we assume that the loans have the characteristics  $R$  and  $o$  after the bank has applied these mandatory methods. Next, credit portfolio modeling (CPM), is-a passive risk management tool. The bank learns the correlation structure of its loan portfolio, at a cost CPM. Without CPM, the bank has expectations about the likely correlation between its loans. With CPM, it learns whether the correlation is  $\rho_H$  or  $\rho_L$ . In the above context, the bank learns whether the loans are in the same sector or not. Banks can use the information generated by CPM to fine-tune their capital structure, depending on their portfolio. Without the information from CPM, the expected correlation of two loans is equal to  $HHI$ ; with CPM, it is either  $\rho_H$  (if loans are in the same sector) or  $\rho_L$ .

Finally, the bank can be maximally advanced in its management of credit risk by implementing both CPM and CRT. This is called advanced risk management (ARM) , it comes at a cost of ARM. Possibly,  $ARM = CPM + CRT$  due to economies of scope. This way, a bank can both diversify and fine-tune their buffers, Note that the value of CPM

depends on whether the bank also uses CRT or not. Hence, ARM is more (or less) than the sum of its components, CPM and CRT. The relative value of each strategy, CRT, CPM or ARM, will depend on parameters, especially the level of competition and the sector concentration.

### **Credit Portfolio Modeling**

The approach presented here aims to overcome the above mentioned difficulties and is in its spirit similar to the one reported by Cespedes et al. (2006). The content, however, is quite different since the presented model has more solid theoretical background, is easier to implement and use and is capable of covering fully featured multi-factor setup. The model described here was developed with KISS principle 1 in mind. While based on the previous author's research on the analytical tractability of multi-factor models (Voropaev, 2011), the proposed model has very simple and intuitive structure. Despite the simple structure, the model produces meaningful and reasonably accurate results and can be used by financial institutions for any of the purposes described above. In particular, the problem of capital allocation has a simple and time-ancient solution allowing real-time risk-based pricing. From conceptual point of view, one of the most attractive features of the model is its ability to quantify risk concentrations on both sector and obligor levels in a similar fashion.

By implementing the credit portfolio model the bank finds out the correlation within their loan portfolio. In other words, it determines whether each of the loans is in the discrete sector. Using this information, it can fine-tune the buffer. If it finds the correlation in its portfolio to be high, the aggregate standard deviation is high, and it needs larger buffers.

We now calculate the benefit of this piece of information. With probability  $\frac{1}{2}$ , the bank finds that both loans are in the discrete sector, hence, they are perfectly correlated. The probability of default is then  $PD_1$ , as defined above in (1). The bank will then maximize  $\Pi = 2R - \frac{1}{2}k^2 - cPD_1$ .

This expected profit is maximized for  $k^+$ , as defined by

$$\frac{\partial \Pi}{\partial k} = -k + \frac{c}{2\sqrt{2\pi}\sigma} X = 0$$

Where  $X$  is the auxiliary variable defined in (4). If, with probability  $1-\mu^2$ , the bank finds that the loans are uncorrelated, the probability of default is  $P_0$ , as defined in (2). The expected profit is  $\Pi_0 = 2R - 2\phi/2 - P_0$ , and the bank can reduce the buffer to  $k^*$ , according to the first order condition

$$\frac{\partial \Pi_0}{\partial k} = -\phi k^* + \frac{c}{2\sqrt{2\pi}\sigma} \sqrt{2X^2} = 0$$

Ex ante, the expected profit is then the average of  $\Pi_1$  and  $\Pi_0$ ,

$$\Pi_{CPM} = \mu^2 \Pi_1 + (1 - \mu^2) \Pi_0$$

Thus, the benefit of credit portfolio modeling equals the difference between the expected profits with and without the information about correlations. Some facts are intuitive. For example, if  $\mu = 0$ , then all the loans in a loan portfolio must be uncorrelated. Consequently, the correlation structure is already known, and the value added by further information is zero. For  $\mu = 1$ , all the loans in a portfolio are perfectly correlated, and nothing more can be learned. Again, the value of additional information is zero. Third, the value of the information can never be negative. We arrive at the following proposition, delivering two hypotheses that will be tested in the empirical section of the paper.

### **Advance Risk Management**

We have considered the benefits to banks of gathering information about their portfolio structure (CPM), and diversifying to reduce the granularity of their loan portfolio (CRT). Now let us define advanced risk management (ARM) as the choice to implement both. In our model, this is the most sophisticated level of risk management: risk is measured and diversified, and the buffers are adjusted. Using ARM, a bank can learn exactly how its portfolio is structured within its portfolio, ending up in five cases, as discussed above: (i) all four loans can be correlated; (ii) all but one can be correlated; (iii) all but two can be correlated; or (iv and v) all may be uncorrelated.

In each case, the bank will then set a different buffer. In the first case, the buffer will be relatively high, and in the last case, it will be relatively low. Calculating the profits in all four scenarios, weighting them with the according probabilities, and calculating the aggregate expected profits, we can calculate the benefits of ARM in comparison to the

second-best alternative. Because CRT and CPM always dominate the benchmark case, only CRT or CPM can be the best alternative.

Finally, ARM is a binary variable equal to one if CRT and CPM are used simultaneously, and zero otherwise. Here, the bank engages in the highest level of advanced risk management as defined in our theoretical model.

### **Review of Previous Studies**

Ahmed, Takeda and Shawn (1998) had found that loan loss provision has a significant positive influence on non-performing loans. Therefore, an increase in loan loss provision indicates an increase in credit risk and deterioration in the quality of loans consequently affecting bank performance adversely.

Mekasha (2001) had investigated credit risk management and its impact performance on Ethiopian Commercial Banks. The researcher used 10 years panel data from the selected commercial banks for the study to examine the relationship between ROA and loan provision, non-performing loans and total assets. The study revealed that there is a significant relationship between bank performance and credit risk management.

Ahmad and Ariff (2007) have examined the key determinants of credit risk of commercial banks on emerging economy banking systems compared with the developed economies. The authors found that regulation is important for banking systems that offer multi-products and services; management quality is critical in the cases of loan-dominant banks in emerging economies. An increase in loan loss provision is also considered to be a significant determinant of potential credit risk. The authors further asserted that credit risk in emerging economy banks is higher than that in developed economies.

Achou and Tenguh (2008) analyzed the 5 years (2001-2005) financial data of Qatar Central Bank. The results of regression model exposed that credit risk management and bank performance have significant relationship. Moreover, findings revealed that the ratio of NPLs/TL has significant negative association with profitability which was measured by return on assets (ROA) and return on equity (ROE).

Ben-Naceur and Omran (2008) in an attempt to examine the influence of bank regulations, concentration, financial and institutional development on commercial banks' margin and profitability in Middle East and North Africa (MENA) countries from 1989-2005 have found that bank capitalization and credit risk have positive and significant impact on bank's net interest margin, cost efficiency and profitability.

Regmi (2013) conducted a study as the and he find the ratio of credit to government enterprises of to total of NBBL is higher than of NSBL. The mean ratio of credit total bills paid and discount to total credit ratio of NBBL is higher than that of NSBL. NSBL has contributed 95.91% in private sector loan, 2.51% in government sector loan and 1.56% in bills paid and discounts. Likewise NBBL has contributed 90.83% in private sector loan, 4.29% in government sector and 4.84% in bills paid and discounts. Among the various measurement of profitability ratio return on equity (ROE) and earnings per share (share) reflects the relative measure of profitability.

The performance of NBBL is better than NSBL. Return on equity and earnings per share of NBBL are higher than that of NSBL in all years. Co-efficient of correlation between deposit and loans & advances of both banks has positive value. Also co-efficient of correlation between total income and loans & advances of both banks have positive relation. Coefficient of correlation between net profit and loans & advances of NSBL is negative as other variables like interest suspense and loan loss provision affects net profit. Coefficient between net profit and loans & advances of NBBL is positive. Trend analysis of total deposit of NSBL and NBBL are found in increasing trend. The increment ratio on deposit of NSBL is lower in comparison to NBBL.

Felix and Claudine (2008) had investigated the relationship between bank performance and credit risk management. It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loan to total loan of financial institutions thereby leading to a decline in profitability.

Kithinji (2010) had assessed the effect of credit risk management on the profitability of commercial banks in Kenya. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits.

Al-Khouri (2011) had examined the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return

on assets while the only risk that affects profitability when measured by return on equity is liquidity risk.

Kargi (2011) had evaluated the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of sampled banks from 2004-2008 and analyzed using descriptive, correlation and regression techniques. "he findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. It concluded that banks profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits hereby exposing them to great risk of illiquidity and distress.

Musyoki and Kadubo (2012) studied the impact of credit risk management on the financial performance of banks. The sample was consists of 10 banks and the data was collected for the period of 2000-2006. The parameters used for credit risk management were default rate, bad debts cost and cost per loan asset while the profitability was measured by ROA. Descriptive, correlation and regression results showed that all above mentioned parameters have statistically significant and negative impact on financial performance of banks. Further results showed that the default rate (NPLs/TL) is the major predictor of bank's financial performance.

Boahene (2012) measured the relationship between credit risk and profitability of Ghanaian banks. NPLs rate, net charge off rate and a pre provision profit as a percentage of net total loans and advances used as explanatory variables of credit risk while three variables such as bank size, bank growth and bank debt capital were used as control variables. The results of fixed affect model revealed that non-performing loans rate, net charge off rate and the pre provision profit as a percentage of net total loans and advances have a positively significant association with bank profitability. These results showed that the Ghanaian banks earned a high profitability in spite of the higher credit riskiness.

Chen and Pan (2012) had examined the credit risk efficiency of 34 Taiwanese commercial banks over the period 2005-2008. Their study used financial ratio to assess the credit risk and was analyzed using Data Envelopment Analysis (DEA). The credit risk parameters were credit risk technical efficiency (CR-TE), credit risk allocative efficiency (CR-AE), and credit risk cost efficiency (CR-CE). The results indicated that only one bank is efficient in all types of efficiencies over the evaluated periods. Overall, the DEA results show relatively low average efficiency levels in CR-TE, CR-AE and CR-CE in 2008.

Epure and Lafuente (2012) had assessed bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin.

Fredrick (2012) had analyzed the impact of credit risk management on the financial performance of commercial banks in Kenya. The study has used CAMEL model as a proxy for credit risk management. The author found that the strong impact of CAMEL (credit risk components) on the financial performance of commercial banks.

Paudel (2012) had examined the impact of credit risk management on the financial performance of commercial banks in Nepal using the financial report of 31 banks for eleven years (2001-2011). The methods of data analysis in the study were descriptive, correlation and multiple regressions. The financial performance indicator used in the study was return on assets (ROA). The predictors of the banks' financial performance used in the study were: default rate, cost per loan assets and capital adequacy ratio. The author asserts that all these parameters have an inverse impact on banks' financial performance. However, among the risk management indicators, default rate (NPLR) is the single most influencing predictor of bank financial performance in Nepal whereas cost per loan assets is not significant predictors of bank performance. The author concludes that credit risk management is crucial on the bank performance since it have a significant relationship with bank performance.

Magnifique (2013) study was to establish the effect of credit risk management and Financial Performance of commercial] banks in Rwanda. The study had four specific objectives of establishing how credit risk identification, credit risk analysis and assessment, credit scoring mechanism and risk monitoring affect financial performance of commercial banks in Rwanda. The study adopted a descriptive research design which assisted to examine the effect between regulation and financial performance of commercial banks. The sample size as well as the population of the study was eleven commercial banks. The response rate was a 100% which comprised 11 commercial banks. Data was gathered using a data a questionnaire and analyzed using SPSS 17. The overall finding and conclusion of the study was that all the measures of credit risk management used in this study are highly significant predictors of financial performance of commercial banks in Rwanda except risk monitoring. The credit risk identification was found to be significant in explaining profitability of commercial banks in Rwanda. The

credit risk scoring and credit analysis and assessment also found to be significant to explain the financial performance.

Onkoba (2014) Commercial Banks earn profits principally by obtaining funds at relatively low interest rates and then lending the funds or investing in securities at higher interest rates. They adopt different credit risk management policies majorly determined by ownership of the banks (privately owned, foreign owned, government influenced and locally owned) credit policies of banks, credit scoring systems, banks regulatory environment and management styles of the banks. The very nature of banking business is so sensitive because more than 85% of their liability is from depositors (Saunders's and Cornett, 2005). It's from these deposits that banks use to generate credit to their borrowers. This credit creation process exposes banks to high default risk which might lead to financial distress including bankruptcy. The objective of the study was to establish the effect of credit risk management on the financial performance of commercial Banks in Kenya. A descriptive study was undertaken in order to ascertain and be able to describe the characteristics of the variables of interest in the study. The independent variables included Loss Reserves/ Gross Loans (LLRR), Non-Performing Loans (NPLR) and CAR with ROA (Net Income/Total Assets) as the dependent variable. Secondary data from commercial banks annual reports (2008-2012) was used. Of the 43 commercial banks in Kenya, full data was attained from 30 banks and thus the study concentrated on the 30 banks. The data was then analyzed, summarized and tabulated. The study concluded that there is a significant relationship between the bank performance (ROA) and credit risk management (Loan Loss Reserve and loan performance). Better credit risk management results in improved bank performance. Thus bank managers need to practice prudent credit risk management, safeguard the assets of the bank and protect the shareholders' interests. They also need diversify their loan portfolio as a way of mitigating credit risk.

Abiola and Olausi (2014) had investigated the impact of credit risk management on the performance of commercial banks in Nigeria. Financial reports of seven commercial banking firms were used to analyze for seven years (2005-2011). Panel regression model was employed for the estimation of the model. In the model, return on equity (ROE) and return on assets (ROA) were used as the performance indicators while non-performing loans (NPL) and capital adequacy ratio (CAR) as credit risk management indicators. The study revealed that credit risk management has a significant impact on the profitability of commercial banks" in Nigeria.



Kurawa and Garba (2014) had assessed the effect of credit risk management (CRM) on the profitability of Nigerian banks with a view to discovering the extent to which default rate (DR), cost per loan assets (CLA), and capital adequacy ratio (CAR) influence banks' profitability (ROA). The secondary data from the annual reports and accounts of quoted banks during the period of 2002 to 2011 were used for analysis. The results of the random-effect generalized least square (GLS) regression techniques reveal that default rate (DR) ratio and cost per loan assets (CLA) ratio have indicated significant positive relationship with the dependent variable, ROA. In respect of the control variable such as LOAN has positive relationship with ROA whereas AGE has negative association with ROA. The authors conclude that credit risk management components have significant positive effect on the profitability of Nigerian banks.

This research conducted by Luqman (2014) found the effect of credit risk on commercial banks performance in Nigeria. The study is motivated by the damaging effect of classified assets on bank capitalization and would be of utmost relevance as it addresses how credit risk affects banks' profitability using a robust sample and the findings would serve as the basis to provide policy measures to the various stakeholders on how to tackle the credit risk in order to enhance the quality of banks' assets and reduce bank risk. Secondary data source was explored in presenting the facts of the situation. The secondary data are obtained from annual reports, relevant literatures and statistical Bulletin publication. The result shows that the ratio of loan and advances to total deposit negatively relate to profitability though not significant at 5% and that the ratio Non-performing loan to loan & Advances negatively relate to profitability at 5% level of significant. This study shows that there is a significant relationship between bank performance (in terms of profitability) and credit risk management (in terms of loan performance). Loans and advances and non-performing loans are major variables in determining asset quality of a bank. Some of the recommendations made in this study are; management need to be cautious in setting up a credit policy that will not negatively affects profitability and also they need to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits and maximization of profit. Improper credit risk management reduce the bank profitability, affects the quality of its assets and increase loan losses and non-performing loan which may eventually lead to financial distress. CBN for policy purposes should regularly assess the lending attitudes of financial institutions. One direct way is to assess the degree of credit crunch by isolating the impact of supply side of loan from the demand side taking into account the opinion of the firms

about banks' tending attitude. Finally, strengthening the securities market will have a positive impact on the overall development of the banking sector by increasing competitiveness in the financial sector.

The main purpose of the research by Li and Zou (2014) was to investigate if there is a relationship between credit risk management and profitability of commercial banks in Europe. We also aim to investigate if the relationship is stable or fluctuating. In the research model, ROE and ROA are defined as proxies of profitability while NPLR and CAR are defined as proxies of credit risk management. The research collects data from the largest 47 commercial banks in Europe from 2007 to 2012 and formulates four hypotheses which are related to the research question. A series of statistical tests are performed in order to test if the relationship exists. Other statistical tests are performed to investigate if the relationship is stable or not. The findings reveal that credit risk management does have positive effects on profitability of commercial banks. Between the two proxies of credit risk management, NPLR has a significant effect on the both ROE and ROA while CAR has an insignificant effect on both ROE and ROA. However, from 2007 to 2012, the relationships between all the proxies are not stable but fluctuating. This research aims at examining the effect of credit risk management on financial performance of the Jordanian commercial banks during the period (2005-2013), thirteen commercial banks have been chosen to express on the whole Jordanian commercial banks. Two mathematical models have been designed to measure this relationship, the research revealed that the credit risk management effects on financial performance of the Jordanian commercial banks as measured by ROA and ROE.

Ekinci (2014) concluded strong connection between bank performance and economic growth. Therefore, understanding on the effects of credit and market risk on bank performance could contribute to the better functioning of the banking system. This study investigates the effects of credit and market risk, i.e., interest rate and foreign exchange (FX) rate risk, on the bank performance for the Turkish banking sector in a time-varying framework employing the generalized autoregressive conditional heteroscedasticity approach for the 18.01.2002-30.10.2015 period by using weekly data. The results suggest two main findings: (i) Credit risk and FX rate have a positive and significant effect, but interest rate has insignificant effect on banking sector profitability, (ii) credit and market risk have a positive and significant effect on conditional bank stock return volatility.

Ariffin and Tafri (2014) aimed empirically study of the impact of financial risks on Islamic banks" profitability. The data for this study is obtained from the annual reports of

Islamic banks' worldwide derived from the Bank scope database for the period between 2004 and 2011. The methodology employed is the Generalized Least Square (GLS) panel data analysis. The dataset used in this study involves 65 full-fledge Islamic banks across the globe. Results show that credit risk and interaction between credit risk and rate of interest risk have significant negative impact on the return on assets (ROA) which is the proxy for Islamic banks' profitability. However, the other financial risks, namely liquidity risk and rate of interest risk, are found to be in significant in affecting the profitability of the banks.

Abiola and Olausi (2014) had investigated the impact of credit risk management on the performance of commercial banks in Nigeria. Financial reports of seven commercial banking firms were used to analyze for seven years (2005-2011). Panel regression model was employed for the estimation of the model. In the model, return on equity (ROE) and return on assets (ROA) were used as the performance indicators while non-performing loans (NPL) and capital adequacy ratio (CAR) as credit risk management indicators. The study revealed that credit risk management has a significant impact on the profitability of commercial banks in Nigeria.

Kurawa and Garba (2014) had assessed the effect of credit risk management (CRM) on the profitability of Nigerian banks with a view to discovering the extent to which default rate (DR), cost per loan assets (CLA), and capital adequacy ratio (CAR) influence banks' profitability (ROA). The secondary data from the annual reports and accounts of quoted banks during the period of 2002 to 2011 were used for analysis, The results of the random-effect generalized least square (GLS) regression techniques reveal that default rate (DR) ratio and cost per loan assets (CLA) ratio have indicated significant positive relationship with the dependent variable, ROA. In respect of the control variable such as LOAN has positive relationship with ROA whereas AGE has negative association with ROA. The authors conclude that credit risk management components have significant positive effect on the profitability of Nigerian banks. Zou & Li (2014) investigated what influence credit risk management has on the profitability of European banks and results of Multivariate regression analysis shows that deterioration in credit risk management affects the performance and the ratio of Non-Performing Loans largely affect the profitability as denoted by Return on Equity and Return on Asset while Capital Adequacy Ratio has negligible consequence on both ROE and ROA.

Alshatti (2015) had examined the effect of credit risk management on financial performance of Jordanian commercial banks during the period 2005-2013 using capital adequacy ratio, credit interest/credit facilities ratio, provision for facilities loss/ net facilities ratio, leverage ratio and non-performing loans/gross loans ratio as independent variables. The dependent variables represent the profitability measured by ROA and ROE. The author concludes that all the credit risk management indicators used in the study have significant effect on the financial performance of the Jordanian commercial banks.

Kodithuwakku (2015) had analyzed the impact of credit risk management on the performance of the commercial banks in Sri Lanka by using both primary and secondary data. The return on assets (ROA) is used as performance indicator and loan provision to total loan (LP/TL), loan provision to non-performing loans (LP/NPL), loan provision to total assets (LP/TA) and nonperforming loans/ total loans (NPL/TL) were used as indicators of credit risk. The result shows that non-performing loans and provisions have an adverse impact on the profitability.

Ugoani (2015) had examined the relationship of poor credit risk management and bank failures in Nigeria using survey research design. The results from the Chi-square statistics revealed that weak corporate governance accelerates bank failures and the credit risk management function is to the greatest extent the most diverse and complex activity in banking business. The author concludes that poor credit risk management influences bank failures.

Alshatti (2015) concluded that the credit risk management indicators considered in this research have a significant effect on financial performance of the Jordanian commercial Banks. Based on -findings, the researcher recommends banks to improve their credit risk management to achieve more profits, in that banks should take into consideration, the indicators of Non-performing loans/Gross loans, Provision for facilities loss/Net facilities and the leverage ratio that were found significant in determining credit risk management. Also, banks should establish adequate credit risk management policies by imposing strict credit estimation before granting loans to customers, and banks in designing an effective credit risk management system, need to establish a suitable credit risk environment; operating under a sound credit granting process, maintaining an appropriate credit administration that involves monitoring, processing as well as enough controls over credit risk, and banks need to put and devise strategies that will not only limit the banks exposition to credit risk but will develop performance and competitiveness of the banks.

Alshatti (2015) had examined the effect of credit risk management on financial performance of the Jordanian commercial banks during the period 2005-2013 using capital adequacy ratio, credit interest/credit facilities ratio, provision for facilities loss/ net facilities ratio, leverage ratio and non-performing loans/gross loans ratio as independent variables. The dependent variables represent the profitability measured by ROA and ROE. The author concludes that all the credit risk management indicators used in the study have significant effect on the financial performance of the Jordanian commercial banks.

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Kodithuwakku (2015) identified the impact of credit risk management on the performance of the commercial banks in Sri Lanka. This study is primarily based on both primary and secondary data. Primary data were collected from eight (08) commercial banks from 24 commercial banks in Sri Lanka. The sample was selected from the population based on the superior financial performance for the period under review and the availability of the consistent data over the set period. The primary data was collected mainly through an interview. The panel data of a five year period from 2009 to 2013 from the selected banks were used to examine the relationship between credit risk and performances. The Return on Assets is used as performance indicator and Loan provision to Total (LP/TL), Loan Provision to Non-Performing Loans, Loan Provision to Total Assets (LP/TA) and Non-Performing Loans/ Total Loans (NPL/TL) were used as indicators of credit risk. Further, a regression model was used to establish the relationship between amounts of loan as well as non-performing loans and profitability during the period of study by using E-views software. The result shows that non-performing loans and provisions have an adverse impact on the profitability.

Githaiga (2015) analyzed the effects of credit risk management practices on the performance of Financial Banking Institutions. The study attempted to establish if there exists any relationship between the credit risk management determinants by use of CAMEL indicators and financial. Performance of commercial banks in Kenya. The study

reviewed several literatures in line with the area of study. This review enabled the researcher to demonstrate and familiarize with the area of study. The review also helped identify gaps in previous studies. This study sought to review the effect of credit risk management on the financial performance of commercial banks. The study used multiple regression analysis in the analysis of data and the findings have been presented in the form of tables and regression equations. The study found out that there is a strong impact between the CAMEL components on the financial performance of commercial banks. The study also established that capital adequacy management efficiency and liquidity had a strong relationship with financial performance (ROA). The study also established that credit risk had a weak and negative relationship with financial performance (ROA). This study concludes that CAMEL model can be used as a proxy for credit risk management when measuring the financial performance.

Pokhrel (2015) conducted a study as the Banks couldn't do better by offering modern banking facilities & new product for the development of banking industry. Provision on bad loan should be maintained as per the directives of Nepal Rastra Bank. RBB& NBL should be more exercise in credit creation & maintaining the effective competitive interest rate for the loan & advances. This helps them to maintain more competitive in the growing banking industry of the country. These banks should be focus for non-funded facility for its less risky business with for good income. These banks should be taken the prompt corrective action for strengthening its business capacity.

Ojha (2016) conducted a study as the measurement of liquidity has revealed that the mean current ratio of all the three banks is not widely varied. All of them are capable in discharging their current liability by current assets. The measurement of lending strength in relating terms has revealed that the total liability to total assets of SCBNL has the highest ratio. The high ratio is the result of high volume of shareholders' equity in the liability mix. Himalayan bank ltd. has high volume of saving and fixed deposits to compare to current deposit resulting into low ratio of non-interest bearing deposits to total deposits ratio compared to the combined mean. The loan advances, & investment to deposit ratio has shown that NIBL Bank Ltd. has developed the highest proportion of its total deposits in earning activities. This is the indicative of that in fund mobilizing activities NIBL Bank Ltd. is significantly better. The lending in commercial purpose is higher in case of NIBL Bank Ltd. and least in case of SCBNL has highest contribution in service sector lending. It has contributed 25.47% of its total credit in general use and social purpose. There is systematic relationship between credit disbursement &

repayment. As recommendation given by Chard, ADBL should play a significant role in such direction as to fulfill the credit demands of rural areas for effective credit recovery from the borrowers or clients, credit should be channeled through the borrower groups. Primary information indicated that the industry environment was found positive in selected banks. Likewise, management quality was also good in the selected banks. In the same way, analysis of variance indicated that most of the items designed for the study were not found significant difference at 0.01 levels of significance.

Khanal (2017) conducted study and he draw a conclusion The average interest income to loan & advances of the NIB is 0.05. Ratio of NIB doesn't show clear direction. Average interest income to loan & advances ratio of NIC is 0.0041 & in terms of the average ratio NIB has best performance. Correlation coefficient between non- performing loan & loans of NIB is -0.666, which shows moderate, negative correlation. It indicates that non-performing loans & loans were moderately negative related with each other. That means, decreasingly on performance in loans management. Effectively loans management helps to decrease the non-performing loans. Least square trend line shows the loan & advance of NIB have been increasing with a constant growth rate. Based in analysis presented table that concludes loan & advances has been increasing by 909.57 million on financial year 2009. Least square trend lines show the loan & advances of NIC have been increasing with a constant growth rate.

Bhattarai (2016) examined the effect of credit risk on performance of Nepalese commercial banks. The descriptive and causal comparative research designs have been adopted for the study. The pooled data of 14 commercial banks for the period 2010 to 2015 have been analyzed using regression model. The regression results revealed that 'non-performing loan ratio' has negative effect on bank performance whereas 'cost per loan assets' has positive effect on bank performance. In addition to credit risk indicators, bank size has positive effect on bank performance. Capital adequacy ratio and cash reserve are not considered as the influencing variables on bank performance. This study concludes that there is significant relationship between bank performance and credit risk indicators.

Alice and Shukla (2016) studied sought to determine the effect of credit management on the financial performance of commercial banks in Rwanda. The study adopted a descriptive survey design. The target population of study consisted of 57 employees of Equity bank in credit department. Entire population was used as the sample giving a sample size of size of 57 employees. Purposive sampling technique was used in sampling

where the entire population was included in the study. Primary data was collected using questionnaires which were administered to the respondents by the researcher. Descriptive and inferential statistics were used to analyze data. The study found that client appraisal; credit risk control and collection policy had effect on financial performance of Equity bank.

Mutava (2016) focused to establish the effect of credit risk management on Financial Performance of commercial banks in Mombasa County. The study had three specific objectives of establishing the effect of liquidity risk management, determine the effect of market risk management and determine the effect of default risk management on credit risk management. Credit risk management is vital. The study thus utilized descriptive survey research design. Questionnaires were used to collect data. The banks that contributed to the study were 44 banks and were selected through simple random sampling. The sample size of the study was 50 credit managers of Commercial Banks. The list was obtained from 2014 central Bank of Kenya. Sampling involves an assortment of a number of individuals or objects from a population such that the selected group contained elements representatives of characteristics found in the entire group. Mugenda and Mugenda, (2003) recommended a representative sample of 10%-30% for descriptive survey research. The study found that there is a correlation between liquidity risk management, default risk management and market risk management with performance of the banks. It however found that the banks do not involve experts and consultants in market risk management thus recommendations were made for the banks to revise their credit risk management policies, open up and share information with other players on market risk thus involve consultants more in their market risk management and to be more proactive than reactive in risk management.

Saeed and Zahidn (2016) had analyzed the impact of credit risk on profitability of five big UK commercial banks. For measuring profitability, two dependent variables ROA and ROE were considered whereas two variables for credit risks were: net charge off (or impairments), and nonperforming loans. Multiple statistical analyses were conducted on bank data from 2007 to 2015 to cover the period of financial crisis. It was found that credit risk indicators had a positive association with profitability of the banks. This means that even after the deep effects of credit crisis in 2008, the banks in the UK are taking credit risks, and getting benefits from interest rates, fee, and commissions etc. The results also reveal that the bank size, leverage, and growth were also positively interlinked with



each other, and the banks achieved profitability after the financial crisis and learned how to tackle the credit risk over the years.

Veizi, Mano and Kociu (2016) considered Credit risk as the biggest risk affects bank's financial performance. The main indicator that shows the quality of the loan portfolio is non-performing loans ratio (NPLR) which is dramatically increased in recent years. Quality of the loan portfolio in the Albanian banking system has been good until 2007 but it began to deteriorate from 2008 onwards, The accelerated growth in the level of non-performing loans in the Albanian banking system remains a major problem for economy in the coming years. Main purpose of the paper is to provide stakeholders correct information in relation to the quantitative relationship that exists between the indicator of credit risk management (NPLR) and profitability indicators ROA (return on assets) and ROE (return on equity) for commercial banks in Albania. On the basis of empirical findings, we conclude that despite that in both cases ROA, ROE, the regression coefficients are different from zero and they show for a negative impact of NPLR on the banking profitability represented by ROA and ROE, the lack of sufficient level of significance, does not allow us to express that the model ensures sustainability of this hypothesis.

Ndoka and Islami (2016) studied a relationship between Credit risk management and profitability of commercial banks in Albania. The main indicators used in this study are Return on Equity, Return on Assets, Non-performing Loans Ratio and Capital Adequacy Ratio. The research collects data from the 16 banks operating in the Albanian banking system from 2005 to 2015. Statistical test is performed in order to test the relationship between the four indicators and the profitability of commercial banks in Albania. This study provides a contribution within the identification of credit risk factors that affect more the profitability of the Albania Banks and the finding of a scientific solution in order to manage the credit risk in a more efficient way.

Kishori and Sheeba (2017) aimed at investigating various factors that influence Credit risk and also aimed at investigating the impact of Credit risk on the profitability of the bank. Through extensive literature review, various factors that influence Credit risk are identified as Capital adequacy ratio (CAR), Nonperforming Asset ratio (NPA), Loan to Deposit Ratio (LDR), Cost per Loan Ratio (CLR), Provision Coverage Ratio (PCR), Leverage Ratio (LR), and Problem Asset Ratio (PAR), Substandard Asset Ratio (SAR), Doubtful Asset Ratio (DAR), Loss Asset Ratio (LAR). Return on Capital (ROC) is identified as the indicator of profitability. The secondary data is collected from the

Annual reports of the State Bank of India for twenty years (1996-1997 to 2015-2016). The data is analyzed by using multiple regressions. The result showed that PAR and LR have significant, negative impact on ROC and other variables do not have significant impact on ROC. But overall credit risk has significant impact on profitability of State Bank. State bank of India faces credit risk due to inefficient Credit risk management. So it is advised to improve Credit risk management practices in State Bank of India. State Bank of India can minimize the Credit risk by reducing the Nonperforming assets and managing the leverage properly.

Tuladhar (2017) investigated the impact of credit risk management on the profitability of Nepalese commercial banks. Data from 28 commercial banks for the period 2011 to 2015 have been collected and analyzed using pooled regression analysis and panel data analysis. The findings indicate that credit risk management has significant impact on the profitability of Nepalese commercial banks. Results show that coverage ratio, capital adequacy ratio, and bank size have a positive impact on bank performance. On the other hand, leverage ratio, nonperforming loan ratio and female board member are found to have a negative impact on bank performance. However, liquidity ratio, asset quality, and cash reserve ratio turned out to be not significant variables in determining bank's performance.

Anner and Obeng (2017) stated effective credit risk management is very important to the health of banks because it has the possibility of either ruining or ensuring the sustenance and growth of the bank. This study assessed the impact of credit risk management on the profitability of 6 selected commercial banks listed on the Ghana stock exchange. Secondary data was gathered from the annual reports of the six selected banks and Ghana banking survey for the years under consideration. The study adopted the Random Effect Model within the panel estimation technique framework. The study used return on equity (ROE) to measure profitability of bank, non-performing loans, loan loss provisions ratio, loan to asset ratio and capital adequacy ratio as credit risk. The findings showed that indeed credit risk management has significant relationship with the profitability of banks. While capital adequacy ratio had positive relationship with a bank's profitability; non-performing loans, loan loss provisions ratio and loan to asset ratio shows statistically significant negative relationship with the profitability of a bank. The study recommends that banks should access and manage credit risk indicators vigorously in order reduce their exposure to these risks.

Taiwo et. al. (2017) investigated into the quantitative effect of credit risk management on the performance of Nigeria's Deposit Money Banks (DMBs) and Bank lending growth over the period of 17 years (1998-2014). Secondary data for empirical analysis was obtained from CBN Statistical bulletin 2014 and World Bank (WDI) 2015. The study employed multiple linear regression models to analyze the time series data. The result showed that sound credit management strategies can boost investors and savers confidence in banks and lead to a growth in funds for loans and advances which leads to increased bank profitability. The findings revealed that credit risk management has an insignificant impact on the growth of total loans and advances by Nigerian Deposit money banks.

Sapkota (2017) examined the study on credit risk management of joint venture commercial bank of Nepal. The author has selected six joint venture commercial banks as sample. The data has been used from 2008 to 2015 for the analysis. The study only used quantitative approach and focused on the description of the output from SPSS, it also used regression model to do empirical analysis. The independent variable used by the author includes credit and advance to total deposit ratio, credit and advance to fixed deposit ratio, credit and advance to total assets ratio, performing assets to total assets ratio, loan and loss provision while dependent variable includes return analysis. The finding of the study showed that banks significantly affect the credit risk management of joint venture commercial bank. The author concluded that the financial performance of credit risk management of joint venture commercial bank of Nepal is driven mainly by capital adequacy of specific factor. The trend of combined credit ratio of the commercial banks is increasing. With the increment in the ratio of credit, there is also increment in the non-performing assets it means that non-performing assets of commercial bank have been increasing regularly.

Paudel (2018) has examined the impact of credit risk management on the financial performance of commercial banks in Nepal using the financial report of 28 banks for eleven years (2001-2011). The methods of data analysis in the study were descriptive, correlation and multiple regressions. The financial performance indicator used in the study was return on assets (ROA). The predictors of the banks financial performance used in the study were: default rate, cost per loan assets and capital adequacy ratio. The author asserts that all these parameters have an inverse impact on banks' financial performance. However, among the risk management indicators, default rate (NPLR) is the single most

influencing predictor of bank financial performance in Nepal whereas cost per loan assets is not significant predictors of bank performance. The author concludes that credit risk management is crucial on the bank performance since it have a significant relationship with bank performance.

Tuladhar (2017) investigated the impact of credit risk management on profitability of Nepalese commercial bank. Data from twenty-eight commercial banks for the period of 2011 to 2015 have been collected and analyzed using pooled regression analysis and panel data analysis. In this study, independent variables are capital adequacy ratio (CAR), liquidity ratio (LR), bank size (BS), asset quality ratio (AQR), leverage ratio (LER), non-performing loan ratio (NPLR), cash reserve ratio (CRR), coverage ratio (CR) and the number of female board members (FBM) have been used as indicator of credit risk management while dependent variable includes return on equity (ROE) and return on assets (ROA) as indicator of profitability. The result showed that coverage ratio, capital adequacy ratio and bank size have a positive impact on performance of bank. On the other hand, leverage ratio, non-performing loan ratio and female board members are found to have a negative impact on the performance of bank, however liquidity ratio, assets quality ratio, cash reserve ratio turned out to be not significant variables in determining bank performance. The study recommends an effective credit risk management for commercial bank of Nepal that should maintain the optimal level of above-mentioned variables to enhance financial performance.

Kutum (2017) has analyzed the impact between credit risk and the profitability of five banks on the Palestine Exchange. Profitability was measured by return on equity and return on assets while credit risk was measured by net charge-offs to total loans and advances, non-performing loans to total loans and advances and pre-provision profit to total loans and advances. Other variables like bank size, leverage and net income growth were included to account for their effects. The study found a weak but positive relationship between credit risk as measured by non-performing loans to total loans and advances and profitability as measured by return on assets. The study also found that bank size was positively related to profitability.

The most of the related empirical studies reported that bank performance is affected by capital adequacy ratio, non-performing loan and cost per loan assets. Moreover, bank performance maybe affected the cash reserve ratio and bank size.

**Table 1: Literature Matrix**

Study	Major Findings
Ahmed, Takeda and Shawn (1998)	An increase in loan loss provision indicates an increase in credit risk and deterioration in the quality of loans consequently affecting bank performance adversely.
Mekasha (2001)	The study revealed that there is a significant relationship between bank performance and credit risk management.
Ahmad and Ariff (2007)	An increase in loan loss provision is also considered to be a significant determinant of potential credit risk. The authors further asserted that credit risk in emerging economy banks is higher than that in developed economies.
Clearly et al. (2007)	Their study found when firms are classified on the basis of size, age or bond rating, relationship between cash flow and investment maybe positive or negative.
Ben-Naceur and Omran (2008)	Have found that bank capitalization and credit risk have positive and significant impact on bank's net interest margin, cost efficiency and profitability.
Achou and Tenguh (2008)	Revealed that the ratio of NPLs/TL has significant negative association with profitability which was measured by return on assets (ROA) and return on equity (ROE).
Ben-Naceur and Omran (2008)	Bank capitalization and credit risk have positive and significant impact on bank's net interest margin, cost efficiency and profitability.
Felix and Claudine (2008)	It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loan to total loan of financial institutions thereby leading to a decline in profitability.
Kithinji (2010)	The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and nonperforming loans impact on profits.

- Al-Khouri (2011) results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk.
- Kargi (2011) The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. It concluded that banks' profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress.
- Musyoki and Kadubo(2012) The parameters used for credit risk management were default rate, bad debts cost and cost per loan asset while the profitability was measured by ROA have statistically significant and negative impact on financial performance of banks. Further results showed that the default rate (NPLs/TL) is the major predictor of bank's financial performance.
- Boahene (2012) The results of fixed affect model revealed that non-performing loans rate, net charge off rate and the pre provision profit as a percentage of net total loans and advances have a positively significant association with bank profitability. These results showed that the Ghanaian banks earned a high profitability in spite of the higher credit riskiness.
- Chen and Pan (2012) The results indicated that only one bank is efficient in all types of efficiencies over the evaluated periods. Overall, the DEA results show relatively low average efficiency levels in CR-TE, CR-AE and CR-CE in 2008.
- Epure and Lafuente(2012) The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin.
- Fredrick (2012) The study has used CAMEL model as a proxy for credit risk management. The author found that the strong impact of CAMEL (credit risk components) on the financial performance of commercial

banks.

- Paudel (2012) The author asserts that all these parameters have an inverse impact on banks' financial performance. However, among the risk management indicators, default rate (NPLR) is the single most influencing predictor of bank financial performance in Nepal whereas cost per loan assets is not significant predictors of bank performance. The author concludes that credit risk management is crucial on the bank performance since it have a significant relationship with bank performance.
- Magnifique (2013) The credit risk identification was found to be significant in explaining profitability of commercial banks in Rwanda. The credit risk scoring and credit analysis and assessment also found to be significant to explain the financial performance.
- Onkoba (2014) The study concluded that here is a significant relationship between the bank performance (ROA) and credit risk management (Loan Loss Reserve and loan performance). Better credit risk management results in improved bank performance.
- Abiola and Olausi(2014) The study revealed that credit risk management has a significant impact on the profitability of commercial banks" in Nigeria.
- Kurawa and Garba(2014) The authors conclude that credit risk management components have significant positive effect on the profitability of Nigerian banks.
- Luqman (2014) Strengthening the securities market will have a positive impact on the overall development of the banking sector by increasing competitiveness in the financial sector.
- Li and Zou (2014) The findings reveal that credit risk management does have positive effects on profitability of commercial banks. Between the two proxies of credit risk management, NPLR has a significant effect on the both ROE and ROA while CAR has an insignificant effect on both ROE and ROA.
- Ekinci (2014) The results suggest two main findings: (i) Credit risk and FX rate have a positive and significant effect, but interest rate has insignificant effect on banking sector profitability, (ii) credit and

market risk have a positive and significant effect on conditional bank stock return volatility.

- Ariffin and Tafri (2014) Results show that credit risk and interaction between credit risk and rate of interest risk have significant negative impact on the return on assets (ROA) which is the proxy for Islamic banks profitability. However, the other financial risks, namely liquidity risk and rate of interest risk, are found to be insignificant in affecting the profitability of the banks.
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- Zou & Li (2014) Credit risk management affects the performance and the ratio of Non-Performing Loans largely affect the profitability as denoted by Return on Equity and Return on Asset while Capital Adequacy Ratio has negligible consequence on both ROE and ROA.
- Alshatti (2015) The author concludes that all the credit risk management indicators used in the study have significant effect on the financial performance of the Jordanian commercial banks.
- Kodithuwakku (2015) The result shows that non-performing loans and provisions have an adverse impact on the profitability.
- Ugoani (2015) The author concludes that poor credit risk management influences bank failures.
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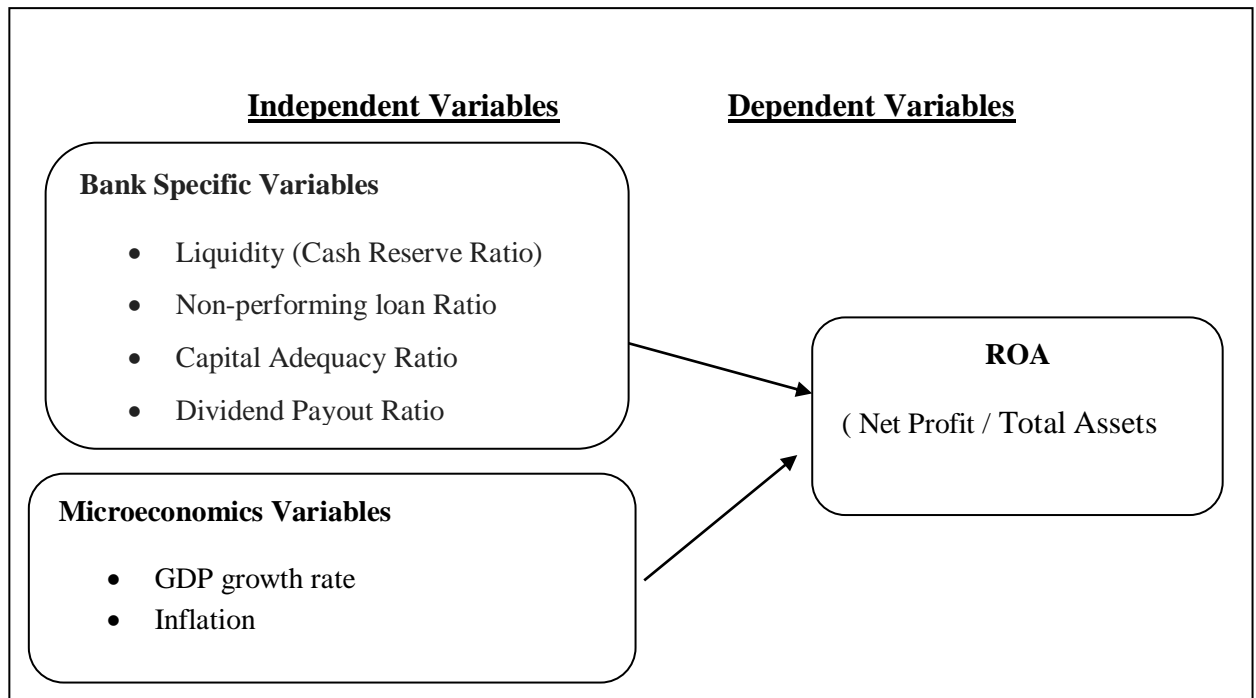


- Kodithuwakku (2015) The result shows that non-performing loans and provisions have an adverse impact on the profitability.
- Githaiga (2015) The study also established that credit risk had a weak and negative relationship with financial performance (ROA). This study concludes that CAMEL model can be used as a proxy for credit risk management when measuring the financial performance.
- Bhattarai (2016) Capital adequacy ratio and cash reserve are not considered as the influencing variables on bank performance. This study concludes that there is significant relationship between bank performance and credit risk indicators.
- Alice and Shukla(2016) The study found that client appraisal; credit risk control and collection policy had effect on financial performance of Equity bank.
- Mutava (2016) Recommendations were made for the banks to revise their credit risk management policies, open up and share information with other players on market risk thus involve consultants more in their market risk management and to be more proactive than reactive in risk management.
- Saeed and Zahidn (2016) The results also reveal that the bank size, leverage, and growth were also positively interlinked with each other, and the banks achieved profitability after the financial crisis and learned how to tackle the credit risk over the years.
- Veizi, Mano and Kociu (2016) The regression coefficients are different from zero and they show for a negative impact of NPLR on the banking profitability represented by ROA and ROE, the lack of sufficient level of significance, does not allow us to express that the model ensures sustainability of this hypothesis.
- Ndoka and Islami (2016) This study provides a contribution within the identification of credit risk factors that affect more the profitability of the Albania Banks and the finding of a scientific solution in order to manage the credit risk in a more efficient way.
- Kishori and Sheeba (2017) The result showed that PAR and LR have significant, negative impact on ROC and other variables do not have significant impact

on ROC. But overall credit risk has significant impact on profitability of State Bank. State bank of India faces credit risk due to inefficient Credit risk management.

- Tuladhar (2017) The findings indicate that credit risk management has significant impact on the profitability of Nepalese commercial banks.
- Anner and Obeng (2017) The study recommends that banks should access and manage credit risk indicators vigorously in order reduce their exposure to these risks.
- Taiwo et.al.(2017) The findings revealed that credit risk management has an insignificant impact on the growth of total loans and advances by Nigerian Deposit money banks.
- Kutum (2017) The study found a weak but positive relationship between credit risk as measured by non-performing loans to total loans and advances and profitability as measured by return on assets. The study also found that bank size was positively related to profitability.
-

## Conceptual Framework



**Figure 1: Conceptual Framework**

## Definitions of Variables

### *Capital adequacy ratio*

This is an independent variable for the determination of the performance and is considered as the core measure of a bank's financial strength from a regulator's point of view. Capital requirement (capital adequacy) is the amount of capital a bank or other financial institution has to hold as required by its financial regulator. This helps to ensure that institutions are not involving in or holding investments that amplify the risk of default. In addition, to guarantee that financial institutions have enough capital to sustain operating losses while honoring withdrawals. (Saeed and Zahidn,2016).

### *Non-performing loan ratio*

Non-performing loans ratio (NPLR) reflects the bank's credit quality and is considered as an indicator of credit risk management, NPLR, in particular, indicates how banks manage their credit risk because it defines the proportion of loan losses amount in rejection to total loan amount(Hosna et al, 2009).

### ***Liquidity (Cash reserve ratio)***

Cash reserve ratio is one of the control variable used in analyzing effect of credit risk on the performance of banks. Traditionally, cash reserve ratio (CRR) has been one of the monetary tools in the hands of the central bank. Cash reserve ratio (CRR) is a specified minimum fraction of the total deposits of customers which commercial banks have to hold as reserves with the central bank. By changing CRR, the central bank can control the amount of liquidity. If the reserve requirement is raised, banks will have less money to loan out and this effectively reduces the amount of capital in the economy, therefore lowering the money supply. It will mean less money for investment and spending, and would stunt the growth of the economy. It would also mean that banks earn less interest and expect that their profitability may decline. Moreover, cash reserve requirement does not earn any income for the commercial banks and thus, may be viewed as a drain on the profitability of banks.

### ***Inflation***

Inflation is defined as a sustained increase in the general level of prices for goods and services. It is measured as an annual percentage increase. Inflation means a state in which the value of money falls and prices across the economy rise. Inflation has direct impact on the change in interest rate of banks deposit and lending activities of commercial banks (Namadi and Awdeh, 2012)

### ***Dividend Payout Ratio***

The dividend payout ratio is the ratio of the total amount of dividends paid out to shareholders relative to the net income of the company. It is the percentage of earnings paid to shareholders in dividends. The amount that is not paid to shareholders is retained by the company to pay off debt or to reinvest in core operations. It is sometimes simply referred to as the payout ratio. The dividend payout ratio provides an indication of how much money a company is returning to shareholders versus how much it is keeping on hand to reinvest in growth, pay off debt, or add to cash reserves (retained earnings).

### ***GDP Growth Rate***

The GDP growth rate measures how fast the economy is growing. It does this by comparing one quarter of the country's gross domestic product to the previous quarter. GDP measures the economic output of a nation. (Poudel, 2018).

The GDP growth rate is driven by the four components of GDP. The main driver of GDP growth is personal consumption. This includes the critical sector of retail sales. The second component is business investment, including construction and inventory levels. Government spending is the third driver of growth. Its largest categories are Social Security benefits, defense spending, and Medicare benefits. The government often increases spending to jump-start the economy during a recession. Fourth is net trade. (Tuladhar, 2017).

### **Research Gap**

Most of the Nepalese commercial banks are found to approve the loans that are not well examined. This may lead to increase the loan defaults and non-performing loans. Thus, the gap is mentioned as:

- The existing procedures for credit risk management are not adequate to compete with the existing financial and economic challenges in Nepal.
- There is need to investigate whether this investment in credit risk management is viable to the banks.
- Therefore, this study seeks to investigate the impact of credit risk indicators on a bank's financial performance in Nepal.
- This study addresses how credit risk affects bank financial performance using a robust sample and the findings would serve as the basis to provide policy measures useful to the various authorities on how to tackle the effect of credit risk in order to enhance the quality of banks' risky assets.

Thus, this study provides empirical evidence in confirming the validity of the theories to assist the bank's management in determining the best credit risk strategies that enhance bank performance. Moreover, the fact that the banking industry in Nepal is still growing and it should ensure that effective strategies are put in place to minimize risk and maximize loan performance at any particular point while in operation. Thus, this study aims to analyze the effect of credit risk on bank performance of commercial banks listed in the Nepalese Stock Exchange.

## Chapter III

### Research Methodology

#### Research Design

Research Design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variances. Basically, this study based on descriptive and analytical research design for fact finding and comparative analysis of data. it's aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how questions with the based on data and calculated results.

#### Population and Sample

There are altogether 27 commercial banks functioning all over the country at present, which are taken as a population of this study. In this particular study, convenience sampling has been used. Among 27 commercial banks, for this study only two commercial banks namely; Bank of Katmandu Ltd. and Nepal Investment Bank Ltd. are used as sample.

**Table 2: List of Sampled Banks with no. of observations.**

<i>S.N.</i>	<i>Name of commercial banks</i>	<i>Abbreviations</i>	<i>Sample Period</i>	<i>No. of Observations</i>
1	Bank of Kathmandu Limited	BOK	2015/16-2019/20	5
2	Nepal Investment Bank Limited	NIBL	2015/16-2019/20	5
<i>Total No. of Observations</i>				<i>10</i>

#### Sampling Design

In this particular study, convenience sampling has been used since convenience sampling, also known as availability sampling, is a specific type of non-probability sampling method that relies on data collection from population members which are conveniently available to participate in study. With regard to using data for this study as per availability of data for sampled banks have been selected as well as for convenient the related articles and studies have only been taken into consideration for this particular study.

**Nature and Source of Data**

This study is mainly based on secondary data. Secondary data are collected from respective annual report. Similarly, articles, journals, bank bulletins, newspaper related to financial performance study, previous research report etc. have also been taken into account while collecting information.

**Instruments of Data Analysis**

The collected data were recorded in excel sheet then analyze with the help of SPSS 20 version. The method of analysis employed in this study includes descriptive analysis and inferential analysis has been applied. Under descriptive the mean, minimum, maximum and standard deviation has been used to analyze the data. Along with descriptive statistics, a correlation matrix including the variables is also presented. The correlation matrix shows that some of the independent variables are significantly correlated with each other. The regression analysis has been carried out to establish the relationship between dependent and independent variables.

**Methods of Analysis (Financial and Statistical)**

Mainly financial methods are applied for the purpose of this study. Appropriate statistical tools are also used. Among them correlation analysis regarded as major one is used for this research. To make the study more specific and reliable, the researcher uses two types of tool for analysis:

- i) Financial Tools
- ii) Statistical Tools

### Financial tools

Financial tools are used to examine the financial strength and weakness of the bank. In this study, following financial tools are used:

**Table 3: List of variables with formulae**

Variables	Notion	Measure
<i>Dependent variables</i>		
Return on Assets (percentage)	ROA	Net income/ Total assets
<i>Independent variables</i>		
Liquidity Ratio	CRR	Cash Reserve Ratio=25% of Total Deposit or Cash Reserve Ratio=1/Deposit Multiplier
Supplementary Capital Ratio	SCR	Tier 2 capital/ Total Risk weighted assets
Core Capital Ratio (percentage)	CCR	Tire 1 Capital/Total risk weighted assets
Non-Performing Loan Ratio(percentage)	NPLR	Non-performing loan/Total amount of outstanding loans in banks
Dividend Payout Ratio	DPR	Total dividend/Net income
GDP Growth Rate	GDPR	$GDP2-GDP1/GDP1 * 100$
Inflation rate(percentage)	IR	$IR2-IRi Ri * 100$

### Statistical Tools

#### A) Descriptive Statistical Tools

Descriptive statistical tools help to find out the trend of financial position of the sample banks. It also analyzes the relationship between variables and helps banks to take appropriate decisions regarding the fulfillment of organization goals. Descriptive analytical tools such as Percentage, Mean (arithmetic), variance and standard deviation have been used in this research.



### I) Average/ Mean

Arithmetic mean of a given set of observations is their sum divided by the number of observations. In general , if  $X_1, X_2, \dots, X_n$  are the given  $N$  observations, then their arithmetic mean, denoted by  $\bar{X}$  is given by,

$$\bar{X} = \frac{X_1 + X_2 + \dots + X_n}{N} = \frac{\sum X}{N}$$

Where,  $\sum X$  = Sum of the observations, and  $N$  = Number of Years

### II) Standard Deviation

Standard deviation is the square root of the sum of the squares of the deviations measured from the mean. Thus, in the calculation of standard deviation, first the arithmetic average is calculated and the deviation of various items from the arithmetic average are squared. The squared deviations are totaled and the sum is divided by the number of items. The square root of the resulting figure is the standard deviation of the series (Elhance & Agarwal, 1975). The standard deviation is conventionally represented by the Greek letter sigma. If  $X_1, X_2, \dots, X_n$  is a set of  $N$  observations then, standard deviation is given by,

$$\sigma = \sqrt{\frac{\sum (X - \bar{X})^2}{N}}$$

$\sum (X - \bar{X})^2$  = Sum of the squares of the deviations measured from mean  $N$  = Number of Observations.

### III) Coefficient of Variation (C.V.)

Coefficient of variation is computed for comparing the variability of two distributions. A distribution with smaller C.V. is said to be more homogeneous or uniform or less variable than the other, and the series with greater C.V. is said to be more heterogeneous or more variable

than the other. It is computed as under.

$$C.V. = \frac{\sigma}{\bar{X}} \times 100\%$$

## B) Inferential Statistical Tools

Unlike with the data description which have the focus of describing the sample data, while the focus of inferential analysis is on estimation or hypothesis testing, by using sample purely to make inferences about the population. This process is formally known as inferential statistics. There are two major groups of inferential statistics, (1) parametric and (ii) non-parametric. In this research, parametric test such as Correlation Analysis and Regression analysis has been used.

### I) Coefficient of correlation (r)

The correlation is a statistical tool which studies the relationship between two variables and correlation analysis involves methods and techniques used for studying and measuring the extent of the relationship between the two variables. Correlation analysis enables to have an idea about the degree and direction of the relationship between the two variables under study. However, it fails to reflect upon the cause and effect relationship between the variables. The coefficient of correlation, denoted by r is computed as under:

$$r = \frac{\sum xy - \frac{\sum x \cdot \sum y}{n}}{\sqrt{\sum x^2 - \frac{(\sum x)^2}{n}} \sqrt{\sum y^2 - \frac{(\sum y)^2}{n}}}$$

## II) Regression Analysis

The literal or dictionary meaning of the regression is moving backward or going back or the return to the average value. Regression analysis is the technique of studying how the variations on one series are related to variation in another series. It determines the nature and strength of relationship between two variables. Thus, regression is the estimation of unknown values or prediction of one variable from known values of other variables.

### *The Regression Model*

$$ROA_{it} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 ROA_{i,t-2} + \beta_3 ROA_{i,t-3} + \beta_4 ROA_{i,t-4} + \beta_5 ROA_{i,t-5} + \beta_6 ROA_{i,t-6} + \epsilon_{it}$$

Where,

$\beta_0$  = Constant Value

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  = Coefficient of Independent Variables

ROA = Return on Assets

CRR = Cash Reserve Ratio

NPLR = Non-performing loan Ratio

CAR = Capital Adequacy Ratio

DPR = Dividend Payout Ratio

GDPR = Gross Domestic Product Growth Rate

IR = Inflation Rate

$\epsilon_{it}$  = Error Term

## Chapter IV

### Results and Discussion

This chapter includes the brief profiles of the different kinds of data and ratios of the selected five banks that have been collected and compiled for the purpose of the study. Then, data are tabulated, analyzed and interpreted and are compared among the banks under study. This chapter delivers the systematic and orderly results of the study in the form of presentation, interpretations and analysis of the secondary data with various issues associated with the relationship between credit risks and financial performance of Nepalese commercial banks.

#### Results (Data Presentation and Analysis)

In this particular study the independent variables have been classified into mainly two section i.e. bank specific variables and microeconomic variables. The bank specific variables consist of cash reserve ratio, non-performing loan ratio, capital adequacy ratio and dividend payout ratio. The dependent variable i.e. return on assets (ROA) also belongs to banks specific variables in this study. The bank specific variables have been individually discussed through tables below.

**Table 4: Structure and Pattern of Return on Assets (ROA)**

Fiscal Year	BOK ROA (Percent)	NIBL ROA (Percent)
2015/16	0.65	2.30
2016/17	0.74	1.90
2017/18	0.84	2.00
2018/19	1.57	2.10
2019/20	1.45	2.13
<i>Mean</i>	1.05	2.09
<i>S.D.</i>	0.38	0.13
<i>CV.</i>	36.41	6.43

(Source: Annual report)

Based on table 4, it can be said that during year 2018/19 and 2015/16, in BOK, there is highest and lowest value of ROA having 1.57 and 0.65. The average value of ROA is 1.05 with standard deviation of 0.38 which depicts the fluctuation during the five year period. The coefficient value of 36.41 reflects the per year changes in terms of fluctuation over return on assets. Further, it can also be said that during year 2015/16 and 2016/17, in NIBL, there is highest and lowest value of ROA having 2.30 and 1.90. The average value of ROA is 2.09 with standard deviation of 0.13 which depicts the fluctuation during the five year period. The coefficient value of 6.43 reflects the per year changes in terms of fluctuation over return on assets.

**Table 5: Structure and Pattern of Cash Reserve Ratio (CRR)**

Fiscal Year	BOK CRR (Percent)	NIBL CRR (Percent)
2015/16	7.30	19.20
2016/17	9.36	12.00
2017/18	8.71	7.20
2018/19	9.98	10.50
2019/20	6.82	8.20
<i>Mean</i>	8.43	11.42
<i>S.D.</i>	1.20	4.24
<i>CV.</i>	14.24	37.13

(Source: Annual Report)

Based on table 5, it can be said that during year 2018/19 and 2019/20, in BOK, there is highest and lowest value of CRR having 9.98 and 6.82. The average value of CRR is 8.43 with standard deviation of 1.20 which depicts the fluctuation during the five-year period. The coefficient value of 14.24 reflects the per year changes in terms of fluctuation over cash reserve ratio. Further, it can also be said that during year 2015/16 and 2017/18, in NIBL, there is highest and lowest value of CRR having 19.20 and 7.20. The average value of CRR is 11.42 with standard deviation of 4.24 which depicts the fluctuation during the five-year period. The coefficient value of 37.13 reflects the per year changes in terms of fluctuation over cash reserve ratio.

**Table 6: Structure and Pattern of Non-performing Loan Ratio (NPLR)**

Fiscal Year	BOK	NIBL
	NPLR (Percent)	NPLR (Percent)
2015/16	3.04	1.77
2016/17	1.29	1.25
2017/18	2.51	0.68
2018/19	3.47	0.83
2019/20	1.06	1.36
<i>Mean</i>	2.27	1.18
<i>S.D.</i>	0.95	0.39
<i>CV.</i>	41.79	33.05

(Source; Annual Report)

Based on table 6, it can be said that during year 2018/19 and 2019/20, in BOK, there is highest and lowest value of NPLR having 3.47 and 1.06. The average value of NPLR is 2.27 with standard deviation of 0.95 which depicts the fluctuation during the five-year period. The coefficient value of 41.79 reflects the per year changes in terms of fluctuation over non-performing loan ratio. Further, it can also be said that during year 2015/16 and 2017/18, in NIBL, there is highest and lowest value of NPLR having 1.77 and 0.68. The average value of NPLR is 1.18 with standard deviation of 0.39 which depicts the fluctuation during the five-year period. The coefficient value of 33.05 reflects the per year changes in terms of fluctuation over non-performing loan ratio.

**Table 7 : Structure and Pattern of Capital Adequacy Ratio (CAR)**

Fiscal Year	BOK	NIBL
	CAR (Percent)	CAR (Percent)
2015/16	14.88	11.27
2016/17	13.41	11.90
2017/18	13.01	14.92
2018/19	13.00	13.02
2019/20	11.57	12.66
<i>Mean</i>	13.17	12.75
<i>S.D.</i>	1.06	1.24
<i>CV.</i>	8.03	9.73

(Source; Annual Report)

Based on table 7, it can be said that during year 2015/16 and 2019/20, in BOK, there is highest and lowest value of CAR having 14.88 and 11.57. The average value of CAR is 13.17 with Standard deviation of 1.06 which depicts the fluctuation during the five-year period. The coefficient value of 8.03 reflects the per year changes in terms of fluctuation over capital adequacy ratio. Further, it can also be said that during year 2017/18 and 2015/16, in NIBL, there is highest and lowest value of CAR having 14.92 and 11.27. The average value of CAR is 12.75 with standard deviation of 1.24 which depicts the fluctuation during the five-year period. The coefficient value of 9.73 reflects the per year changes in terms of fluctuation over capital adequacy ratio.

**Table 8: Structure and Pattern of Dividend Payout Ratio (DPR)**

Fiscal Year	BOK DPR (Percent)	NIBL DPR (Percent)
2015/16	14.00	40.00
2016/17	13.25	34.70
2017/18	23.00	41.00
2018/19	27.37	40.00
2019/20	10.96	40.00
<i>Mean</i>	17.72	39.14
<i>S.D.</i>	6.33	2.25
<i>CV.</i>	35.75	5.76

(Source: Annual Report)

Based on table 8 it can be said that during year 2018/19 and 2019/20, in BOK, there is highest and lowest value of DPR having 27.37 and 10.96. The average value of DPR is 17.72 with standard deviation of 6.33 which depicts the fluctuation during the five-year period. The coefficient value of 35.75 reflects the per year changes in terms of fluctuation over dividend payout ratio. Further, it can also be said that during year 2017/18 and 2016/17, in NIBL, there is highest and lowest value of DPR having 41.00 and 34.70. The average value of DPR is 39.14 with standard deviation of 2.25 which depicts the fluctuation during the five-year period. The coefficient value of 5.76 reflects the per year changes in terms of fluctuation over dividend payout ratio.

### Microeconomic Variables

In this particular study the independent variables have been classified into mainly two section i.e. bank specific variables and microeconomic variables. The microeconomic variables consist of GDP growth rate and inflation rate.

**Table 9: Structure and Pattern of GDP Growth Rate (GDPR)**

Fiscal Year	GDP Growth Rate (Percent)
2015/16	5.71
2016/17	2.98
2017/18	0.20
2018/19	7.75
2019/20	6.30
<i>Mean</i>	4.59
<i>S.D.</i>	2.68
<i>CV.</i>	58.51

(Source: Economic Survey of Nepal 2020)

Based on table 9, in fiscal year 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20, the GDP growth rate is 5.71, 2.98, 0.20, 7.75 and 6.30 respectively. The highest and lowest GDP growth rate can be seen in fiscal year 2018/19 and 2017/18 respectively. The mean of GDP growth rate is 4.59 having standard deviation of 2.68 over the five years' period. The coefficient of variance over the five years' period is 58.51 percent.

**Table 10: Structure and Pattern of Inflation Rate (IR)**

Fiscal Year	Inflation Rate (Percent)
2015/16	9.1
2016/17	7.2
2017/18	9.9
2018/19	4.5
2019/20	4.14
<i>Mean</i>	6.97
<i>S.D.</i>	2.34
<i>CV.</i>	33.52

(Source: [www.Statista.com](http://www.Statista.com))



Based on table 10 in fiscal year 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20, the inflation rate is 9.1, 7.2, 9.9, 4.5 and 4.14 respectively. The highest and lowest inflation rate can be seen in fiscal year 2017/18 and 2018/19 respectively. The mean of inflation rate is 6.97 having standard deviation of 2.34 over the five years' period. The coefficient of variance over the five years' period is 33.52 percent.

**Table 11: Descriptive Analysis of Bank Specific Variables for Both BOK and NIBL.**

<b>Descriptive Statistics for BOK</b>						
<b>Variables</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Variance</b>
<b>ROA</b>	5	0.65	1.57	1.05	0.42	0.18
<b>CRR</b>	5	6.82	9.98	8.43	1.34	1.80
<b>NPLR</b>	5	1.06	3.47	2.27	1.06	1.12
<b>CAR</b>	5	11.57	14.88	13.17	1.18	1.39
<b>DPR</b>	5	10.96	27.37	17.71	7.07	50.12
<b>GDPR</b>	5	0.20	7.75	5.59	3.00	9.01
<b>IR</b>	5	4.14	9.90	6.97	2.61	6.82

<b>Descriptive Statistics for NIBL</b>						
<b>Variables</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Variance</b>
<b>ROA</b>	5	1.90	2.30	2.08	0.14	0.02
<b>CRR</b>	5	7.20	19.20	11.42	4.74	22.47
<b>NPLR</b>	5	0.68	1.77	1.17	0.43	0.18
<b>CAR</b>	5	11.27	14.92	12.75	1.38	1.92
<b>DPR</b>	5	34.70	41.00	39.14	2.51	6.34
<b>GDPR</b>	5	0.20	7.75	4.59	3.00	9.01
<b>IR</b>	5	4.41	9.90	6.97	2.61	6.82

The table 11 depicts that the total number of observations is 5 for both banks. As per BOK, Variables such as ROA, CRR, NPLR, CAR, DPR, GDPR and IR have minimum range of 0.65, 6.82, 1.06, 11.57, 10.96, 0.20 and 4.14 respectively whereas NIBL has

1.90, 7.20, 0.68, 11.27, 34.70, 0.20 and 4.14 respectively. Further, As per BOK, Variables such as ROA, CRR, NPLR, CAR, DPR, GDPR and IR have maximum range of 1.57, 9.98, 3.47, 14.88, 27.37, 5.71 and 9.90 respectively whereas NIBL has 2.30, 19.22, 1.77, 14.92, 41, 7.75 and 9.90 respectively. The mean value of return on assets (ROA) for BOK and NIBL is 1.05 and 2.08 respectively. Thus comparatively the ROA, which measures financial performance as well as profitability, is better in NIBL. BOK and NIBL have the standard deviation of 0.42 and 0.14 for ROA respectively which implies in BOK there is more fluctuation over 5 years' period in financial performance and profitability. The per year changes as per ROA, in BOK and NIBL, measured by variance, is 0.18 and 0.02 respectively.

The mean value of CRR for BOK and NIBL is 8.43 and 11.42 respectively. Thus comparatively the CRR, which indicates liquidity position, ability to pay off short term liabilities and obligations, is better in NIBL. BOK and NIBL have the standard deviation of 1.34 and 4.74 for CRR respectively which implies in NIBL there is more fluctuation over 5 years' period in paying ability of short term obligations and liabilities. The per year changes as per CRR, in BOK and NIBL, measured by variance, is 1.80 and 22.47 respectively.

The mean value of non-performing loan ratio (NPLR) for BOK and NIBL is 3.47 and 1.17 respectively. Thus comparatively the NPLR, which measures quality of loan portfolio among banks, higher NPL stimulates high-risk lending which can lead a bank to failures, is higher in BOK. BOK and NIBL have the standard deviation of 1.06 and 0.43 for NPLR respectively. Thus BOK has more fluctuation over 5 years' period in high-risk lending. The per year changes as per NPLR, in BOK and NIBL, measured by variance, is 1.12 and 0.18 respectively.

The mean value of capital adequacy ratio (CAR) for BOK and NIBL is 13.17 and 12.75 respectively. In general, a bank with a high capital adequacy ratio is considered as safer and likely to meet its financial obligations. Thus comparatively the CAR, is higher in BOK which indicates better ability to pay its financial obligations. BOK and NIBL have the standard deviation of 1.18 and 1.38 for CAR respectively. Thus NIBL has more fluctuation over 5 years' period in meeting its financial obligations. The per year changes as per CAR, in BOK and NIBL, measured by variance, is 1.39 and 1.92 respectively.

The mean value of dividend payout ratio (DPR) is 17.71 and 39.14 in BOK and NIBL respectively. The higher DPR in NIBL depicts that it can pay more dividends to its shareholders' in comparison to BOK shareholders'. In other words, in terms of paying out dividends to shareholders' the BOK is much abler than NIBL. BOK and NIBL have the standard deviation of 7.08 and 2.51 for DPR respectively. Thus NIBL has more fluctuation over 5 years' period in distributing dividend to its shareholders'. The per year changes as per CAR, in BOK and NIBL, measured by variance, is 50.12 and 6.34 respectively.

**Table 12: Combined Descriptive Analysis Variables.**

Variables	N	Descriptive Statistics				
		Minimum	Maximum	Mean	Std. Deviation	Variance
<b>ROA</b>	10	0.65	2.30	1.57	0.62	0.39
<b>CRR</b>	10	6.82	19.20	9.93	3.64	13.27
<b>NPLR</b>	10	0.68	3.47	1.73	0.96	0.92
<b>CAR</b>	10	11.27	14.92	12.96	1.24	1.53
<b>DPR</b>	10	10.96	41.00	28.43	12.35	152.60
<b>GDPR</b>	10	0.20	7.75	4.59	2.83	8.01
<b>IR</b>	10	4.14	9.90	6.97	2.46	6.06

The table 12 depicts that the total number of observations is 10. ROA, CRR, NPLR, CAR, DPR, GDPR and IR have minimum range of 0.65, 6.82, 0.68, 11.57, 10.96, 0.20 and 4.14 whereas maximum ranges are 2.30, 19.20, 3.47, 14.92, 41, 7.75 and 9.90 respectively. The mean value for the variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 1.57, 9.93, 1.73, 12.96, 28.43, 4.59 and 6.97 respectively. Moreover, the standard deviation for variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 0.62, 3.64, 0.96, 1.24, 12.35, 2.83 and 2.46 respectively. Finally, the variance for the variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 0.39, 13.27, 0.92, 1.53, 152.50, 8.01 and 6.06 respectively.

**Table 13: Bivariate Pearson's Correlation Analysis**

Variables	ROA	CRR	NPLR	CAR	DPR	GDPR	IR
ROA	1						
CRR	0.48	1					
NPLR	-0.48	0.01	1				
CAR	-0.42	-0.59	0.17	1			
DPR	0.87**	0.44	-0.35	-0.11	1		
GDPR	0.27	0.17	0.21	-0.32	0.01	1	
IR	-0.29	0.19	0.13	0.39	0.01	-0.75*	1

Based on table 13 it can be observed that the dependent variable return on assets (ROA) which is a measure parameter for financial performance in this particular study, is positively correlated with independent variables that are cash reserve ratio (CRR) and gross domestic product ratio (GDPR) which implies that they move in the same direction. In other words, when one increases another one also increases and vice versa. Further, it can also be observed that the dependent variable return on assets (ROA) is negatively correlated with independent variables that are nonperforming loan ratio (NPLR), capital adequacy ratio (CAR) and inflation rate (IR) which implies the meaning that they move in the inverse direction. In other words, when one increases another one also decreases and vice versa.

Similarly, there is positive relationship between CRR, DP and IR which reflects that they are positively influenced by each other thus, they lead each other in the same direction. In other words, when one increases another one also increases and vice versa. However, CRR, CAR and GDPR have negatively correlated that implies they lead each other in the opposite direction. Moreover, NPLR has positive relationship with CAR and IR that implies they lead each other in the same direction however NPLR has got negative correlation with DPR and GDPR which states that they lead each other in the inverse direction.

Moreover, there is negative relationship between CAR and GDPR which reflects that they are negatively influenced by each other thus; they lead each other in the inverse direction. In other words, when one increases another one also increases and vice versa. However, CAR, DPR and IR have positively correlated that implies they lead each other in the same direction.

**Table 14: Regression analysis of CRR, NPLR, CAR, DPR, GDP and IR on ROA.**

<i>M</i>	<i>Regression Coefficient</i>							<i>R</i> <sup>2</sup>	<i>F-Value</i>	<i>P-Value</i>
	<i>Intercept</i>	<i>CRR</i>	<i>NPLR</i>	<i>CAR</i>	<i>DPR</i>	<i>GDP</i>	<i>IR</i>			
1	0.76 (1.35)	0.08 (1.54)						0.23	2.36	0.16
2	2.11 (5.36)		-0.31 (1.56)					0.23	2.42	0.16
3	4.29 (2.03)			-0.21 (-1.29)				0.17	1.67	0.23
4	0.32 (1.18)				0.04 (5.03)			0.76	25.31	0.01*
5	1.29 (3.24)					0.06 (0.08)		0.07	0.64	0.47
6	2.07 (3.29)						-0.08 (-0.84)	0.08	0.71	0.42
7	2.31 (2.54)			-0.12 (-1.72)	0.04 (6.46)			0.90	17.63	0.02*
8	3.09 (2.16)	-0.018 (-0.48)	-0.08 (-0.76)	-0.19 (-1.85)	0.042 (4.39)			0.89	10.21	0.013**
9	0.05 (0.18)				0.04 (5.58)	0.09 (1.70)		0.83	17.08	0.02* *
10	3.28 (2.41)	-0.028 (-0.83)		-0.21 (-2.3)	0.045 (5.54)			0.88	14.45	0.04* *

Notes:

(i) Figures in parentheses are t-values.

(ii) The asterisk (\*) sign indicates that result is significant at 1 percent level and double asterisk (\*\*) sign indicates that result is significant at 5 percent.

**Model 1**

$$ROA = \beta_0 + \beta_1 CRR + \epsilon$$

This is the model formed with the combination of ROA and CRR indicates that the model explains 29 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of CRR indicates that there is positive relationship between CRR and ROA whereas P value 0.16 indicates that the model is insignificant. Positive sign of coefficient shows that CRR and ROA move in the same direction.

**Model 2**

$$ROA = \beta_0 + \beta_1 NPLR + \epsilon$$

The model 2 is formed with the combination of ROA and NPLR indicates that the model explains 23 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of NPLR indicates that there is positive relationship between NPLR and ROA whereas P value 0.16 indicates that the model is insignificant. Positive sign of coefficient shows that NPLR and ROA move in the same direction.

**Model 3**

$$ROA = \beta_0 + \beta_1 CAR + \epsilon$$

The model 3 is formed with the combination of ROA and CAR indicates that the model explains 17 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the negative coefficient of CAR indicates that there is negative relationship between CAR and ROA whereas P value 0.23 indicates that the model is insignificant. Negative sign of coefficient shows that CAR and ROA moves in the inverse direction.

**Model 4**

$$ROA = \beta_0 + \beta_1 DPR + \epsilon$$

The model 4 is formed with the combination of ROA and DPR indicates that the model explains 76 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of DPR indicates that there is positive relationship between DPR and ROA whereas P value 0.01 indicates that the model is significant. Positive sign of coefficient

shows that DPR and ROA move in the same direction.

### Model 5

$$ROA = \beta_0 + \beta_1 GDP + \epsilon$$

The model 5 is formed with the combination of ROA and GDP indicates that the model explains 7 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the negative coefficient of GDP indicates that there is negative relationship between GDP and ROA whereas P value 0.47 indicates that the model is insignificant. Negative sign of coefficient shows that GDP and ROA move in the inverse direction.

### Model 6

$$ROA = \beta_0 + \beta_1 IR + \epsilon$$

This is the model formed with the combination of ROA and IR indicates that the model explains 8 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of IR indicates that there is positive relationship between IR and ROA whereas P value 0.42 indicates that the model is insignificant. Positive sign of coefficient shows that IR and ROA move in the same direction.

### Model 7

$$ROA = \beta_0 + \beta_1 CAR + \beta_2 DPR + \beta_3 IR + \epsilon$$

The model 7 is formed with the combination of ROA, CAR, DPR and IR indicates that the model explains 90 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.02 indicates that the model is significant.

### Model 8

$$ROA = \beta_0 + \beta_1 CRR + \beta_2 NPLR + \beta_3 CAR + \beta_4 DPR + \epsilon$$

The model 8 is formed with the combination of ROA, CRR, NPLR, CAR and DPR indicates that the model explains 89 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.013 indicates that the model is significant

**Model 9**

$$\text{ROA} = \beta_0 + \beta_1 \text{DPR} + \beta_2 \text{GDPR} + \epsilon$$

The model 9 is formed with the combination of ROA, DPR and GDPR indicates that the model explains 83 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.02 indicates that the model is significant.

**Model 10**

$$\text{ROA} = \beta_0 + \beta_1 \text{CRR} + \beta_2 \text{CAR} + \beta_3 \text{DPR} + \epsilon$$

The model 10 is formed with the combination of ROA, CAR and DPR indicates that the model explains 88 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.04 indicates that the model is significant.



**Table 4.12: Summary Table for Hypothesis Testing**

<i>Research Hypothesis</i>	<i>Variables</i>		<i>P-Value</i>	<i>Result At 95 and 90 percent interval</i>
	<i>Dependent</i>	<i>Independent</i>		
<b>HO<sub>1</sub></b> There is no significant relationship between cash reserve ratio and ROA.	ROA	CRR	<b>0.16</b>	>5 percent and 10 percent Doesn't Support <b>HO</b>
<b>HO<sub>2</sub></b> There is no significant relationship between nonperforming loan ratio and ROA.	ROA	NPLR	<b>0.16</b>	>5 percent and 10 percent Doesn't Support <b>HO</b>
<b>HO<sub>3</sub></b> There is no significant relationship between capital adequacy ratio and ROA.	ROA	CAR	<b>0.23</b>	>5 percent and 10 percent Doesn't Support <b>HO</b>
<b>HO<sub>4</sub></b> There is no significant relationship between dividend payout ratio and ROA.	ROA	DPR	<b>0.01*</b>	<5 percent and 10 percent supports <b>HO</b>
<b>HO<sub>5</sub></b> There is no significant relationship between GDP growth rate and ROA,	ROA	GDPR	<b>0.47</b>	>5 percent and 10 percent Doesn't Support <b>HO</b>
<b>HO<sub>6</sub></b> There is no significant relationship between inflation and ROA	ROA	IR	<b>0.42</b>	>5 percent and 10 percent Doesn't Support <b>HO</b>

## Major Findings

1. It can be said that during year 2018/19 and 2015/16, in BOK, there is highest and lowest value of ROA having 1.57 and 0.65. The average value of ROA is 1.05 with standard deviation of 0.38 which depicts the fluctuation during the five-year period. The coefficient value of 36.41 reflects the per year changes in terms of fluctuation over return on assets. Further, it can also be said that during year 2015/16 and 2016/17, in NIBL, there is highest and lowest value of ROA having 2.30 and 1.90. The average value of ROA is 2.09 with standard deviation of 0.13 which depicts the fluctuation during the five-year period. The coefficient value of 6.43 reflects the per year changes in terms of fluctuation over return on assets.
2. It can be said that during year 2018/19 and 2019/20, in BOK, there is highest and lowest value of CRR having 9.98 and 6.82. The average value of CRR is 8.43 with standard deviation of 1.20 which depicts the fluctuation during the five year period. The coefficient value of 14.24 reflects the per year changes in terms of fluctuation over cash reserve ratio. Further, it can also be said that during year 2015/16 and 2017/18, in NIBL, there is highest and lowest value of CRR having 19.20 and 7.20. The average value of CRR is 11.42 with standard deviation of 4.24 which depicts the fluctuation during the five-year period. The coefficient value of 37.13 reflects the per year changes in terms of fluctuation over cash reserve ratio.
3. It can be said that during year 2018/19 and 2019/20, in BOK, there is highest and lowest value of NPLR having 3.47 and 1.06. The average value of NPLR is 2.27 with standard deviation of 0.95 which depicts the fluctuation during the five-year period. The coefficient value of 41.79 reflects the per year changes in terms of fluctuation over nonperforming loan ratio. Further, it can also be said that during year 2015/16 and 2017/18, in NIBL, there is highest and lowest value of NPLR having 1.77 and 0.68. The average value of NPLR is 1.18 with standard deviation of 0.39 which depicts the fluctuation during the five-year period. The coefficient value of 33.05 reflects the per year changes in terms of fluctuation over non-performing loan ratio.
4. It can be said that during year 2015/16 and 2019/20, in BOK, there is highest and lowest value of CAR having 14.88 and 11.57. The average value of CAR is 13.17 with standard deviation of 1.06 which depicts the fluctuation during the five-year period. The coefficient value of 8.03 reflects the per year changes in terms of fluctuation over capital adequacy ratio. Further, it can also be said that during year

- 2017/18 and 2015/16, in NIBL, there is highest and lowest value of CAR having 14.92 and 11.27. The average value of CAR is 12.75 with standard deviation of 1.24 which depicts the fluctuation during the five-year period. The coefficient value of 9.73 reflects the per year changes in terms of fluctuation over capital adequacy ratio.
5. It can be said that during year 2018/19 and 2019/20, in BOK, there is highest and lowest value of DPR having 27.37 and 10.96. The average value of DPR is 17.72 with standard deviation of 6.33 which depicts the fluctuation during the five-year period. The coefficient value of 35.75 reflects the per year changes in terms of fluctuation over dividend payout ratio. Further, it can also be said that during year 2017/18 and 2016/17, in NIBL, there is highest and lowest value of DPR having 41.00 and 34.70. The average value of DPR is 39.14 with standard deviation of 2.25 which depicts the fluctuation during the five-year period. The coefficient value of 5.76 reflects the per year changes in terms of fluctuation over dividend payout ratio.
  6. In fiscal year 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20, the GDP growth rate is 5.71, 2.98, 0.20, 7.75 and 6.30 respectively. The highest and lowest GDP growth rate can be seen in fiscal year 2018/19 and 2017/18 respectively. The mean of GDP growth rate is 4.59 having standard deviation of 2.68 over the five years' period. The coefficient of variance over the five years' period is 58.5] percent.
  7. In fiscal year 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20, the inflation rate is 9.1, 7.2, 9.9, 4.5 and 4.14 respectively. The highest and lowest inflation rate can be seen in fiscal year 2017/18 and 2018/19 respectively. The mean of inflation rate is 6.97 having standard deviation of 2.34 over the five years' period. The coefficient of variance over the five years' period is 33.52 percent.
  8. The total number of observations is 5 for both banks. As per BOK, Variables such as ROA, CRR, NPLR, CAR, DPR, GDPR and IR have minimum range of 0.65, 6.82, 1.06, 11.57, 10.96, 0.20 and 4.14 respectively whereas NIBL has 1.90, 7.20, 0.68, 11.27, 34.70, 0.20 and 4.14 respectively. Further, as per BOK, Variables such as ROA, CRR, NPLR, CAR, DPR, GDPR and IR have maximum range of 1.57, 9.98, 3.47, 14.88, 27.37, 5.71 and 9.90 respectively whereas NIBL has 2.30, 19.22, 1.77, 14.92, 41, 7.75 and 9.90 respectively.
  9. The total number of observations is 10. ROA, CRR, NPLR, CAR, DPR, GDPR and IR have minimum range of 0.65, 6.82, 0.68, 11.57, 10.96, 0.20 and 4.14 whereas maximum ranges are 2.30, 19.20, 3.47, 14.92, 41, 7.75 and 9.90 respectively. The mean value for the variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are

1.57, 9.93, 1.73, 12.96, 28.43, 4.59 and 6.97 respectively. Moreover, the standard deviation for variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 0.62, 3.64, 0.96, 1.24, 12.35, 2.83 and 2.46 respectively. Finally, the variance for the variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 0.39, 13.27, 0.92, 1.53, 152.50, 8.01 and 6.06 respectively.

10. It can be observed that the dependent variable return on assets (ROA) which is a measure parameter for financial performance in this particular study, is positively correlated with independent variables that are cash reserve ratio (CRR) and gross domestic product ratio (GDPR) which implies that they move in the same direction. In other words, when one increases another one also increases and vice versa. Further, it can also be observed that the dependent variable return on assets (ROA) is negatively correlated with independent variables that are non-performing loan ratio (NPLR), capital adequacy ratio (CAR) and inflation rate (IR) which implies the meaning that they move in the inverse direction. In other words, when one increases another one also decreases and vice versa.
11. This is the model formed with the combination of ROA and CRR indicates that the model explains 29 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of CRR indicates that there is positive relationship between CRR and ROA whereas P value 0.16 indicates that the model is insignificant. Positive sign of coefficient shows that CRR and ROA move in the same direction.
12. The model 2 is formed with the combination of ROA and NPLR indicates that the model explains 23 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of NPLR indicates that there is positive relationship between NPLR and ROA whereas P value 0.16 indicates that the model is insignificant. Positive sign of coefficient shows that NPLR and ROA move in the same direction.
13. The model 3 is formed with the combination of ROA and CAR indicates that the model explains 17 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the negative coefficient of CAR indicates that there is negative relationship between CAR and ROA whereas P value 0.23 indicates that the model

- is insignificant. Negative sign of coefficient shows that CAR and ROA moves in the inverse direction.
14. The model 4 is formed with the combination of ROA and DPR indicates that the model explains 76 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of DPR indicates that there is positive relationship between DPR and ROA whereas P value 0.01 indicates that the model is significant. Positive sign of coefficient shows that DPR and ROA move in the same direction.
  15. The model 5 is formed with the combination of ROA and GDPR indicates that the model explains 7 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the negative coefficient of GDPR indicates that there is negative relationship between GDPR and ROA whereas P value 0.47 indicates that the model is insignificant. Negative sign of coefficient shows that GDPR and ROA move in the inverse direction.
  16. This is the model formed with the combination of ROA and IR indicates that the model explains 8 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. Similarly, the positive coefficient of IR indicates that there is positive relationship between IR and ROA whereas P value 0.42 indicates that the model is insignificant. Positive sign of coefficient shows that IR and ROA move in the same direction.
  17. The model 7 is formed with the combination of ROA, CAR, DPR and IR indicates that the model explains 90 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.02 indicates that the model is significant.
  18. The model 8 is formed with the combination of ROA, CRR, NPLR, CAR and DPR indicates that the model explains 89 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.013 indicates that the model is significant.
  19. The model 9 is formed with the combination of ROA, DPR and GDPR indicates that the model explains 83 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.02 indicates that the model is significant.

20. The model 10 is formed with the combination of ROA, CAR and DPR indicates that the model explains 88 percent of variability of data in dependent variable is due to independent variable and rest is affected by various factors in the economy. The P value 0.04 indicates that the model is significant.

### **Discussion**

During the past few decades, systematic financial crisis has plagued countries throughout the world and necessity to understand the links between the weakness within the financial sector and the economy as a whole have become increasingly important.

The results reveal that the variables of CRM (DR and CPLA) have significant negative impact on profitability (ROA and ROE). Similarly, CAR has significant positive impact on profitability of Nepalese commercial banks.

This study results reveal that there is a significant negative relationship between default rate and profitability. That means increase in DR leads to increase in profitability of banks.

Poudel (2012) found that there is a significant negative relationship between default rate and return on assets. Garba (2014) stated that CRM as measured by default rate has a significant positive effect on probability of Nigerian banks as indicated by the coefficient of determination “R<sup>2</sup>” value. The study recommends that banks management should be more scientific in their credit risk assessment and management of loan portfolio in order to minimize the high incidence of non-performing loans and their negative effect on profitability.

The result found that the cost per loan assets ratio has significant negative impact on profitability.

Shrestha (2017) stated that there is positive relationship between cost per loan assets and bank performance. Banks that are efficient in managing their expenses, holding other factors constant, earn high profits. Therefore, it is expected that cost per loan assets and bank performance to be negatively associated. This may not always be true because in cases where there are high expenditures due to a lot of business done, the bank can still increase the returns.

However, the empirical studies found the mixed results on these issues. Poudel (2012) has found negative but statistically insignificant association between cost per loan assets (CPLA) and bank performance (ROA) but in Nigerian perspective, Karuwa and Garba (2014) have found significant positive association between cost per loan assets (CPLA)

ratio and bank profitability. In view of theoretical perspective and empirical evidences a negative relationship is expected between cost per loan assets and banks performances.

This study results reveal that there is a significant positive relationship between adequacy and profitability. That means increase in capital adequacy ratio leads to increase in profitability.

Jha and Hui (2012) found negative association between capital adequacy ratio and ROA and the coefficient was statistically significant. Gizawet al, (2015) found the CAR has a significant positive effect on ROE, but not on ROA. That holding capital beyond the optimal level would positive effect on the efficiency and profitability of commercial banks. Aruwa and Musa (2014), Karuwa and Garba (2014) found significant positive relationship between capital adequacy variable and financial performance of the banks. Alshatti (2015) found no effect of the capital adequacy ratio on the performance of banks. In Nepalese context, Shrestha (2017) has found positive relationship between capital adequacy ratio and profitability.

It indicates that profitability is fairly affected by credit risk management in the banking sector. Since banks have different characteristics and risk management policies, credit risk management affects profitability on different levels in each banks. Therefore, credit risk management is the major task for bank profitability and stability.

## Chapter V

### Summary and Conclusion

#### Summary

Nepalese banking industry has become more competitive since 1980's after the government permitted the entry of foreign commercial bank and more private commercial banks were established within the country (NRB, 2012). The foreign commercial bank did not only bring more capital in the economy but also bring experience and expertise with them which has increase competitiveness in the industry. Nepalese commercial bank has been operated in a very competitive environment. The intense competition within the industry has affected its ability to earn profit. It has challenged the financial sector stability and growth. Recently NRB has issued a directive to increase paid up capital of commercial bank. Thus, concentration within the industry is another factor affecting the banking profitability and its effect on Nepalese commercial is unidentified. Bank interest rates, both on deposits and loan, are determined in two ways: legislative determined and market determined. Before the economic liberalization, NRB used to determine the interest rate for all commercial banks. But after the liberalization, it is deregulated. It is now determined by the commercial banks through market forces. As Interest rates are deregulated and banks are free to set their own deposit and lending rates.

The main objectives of the study are to examine impact of credit risks on profitability of Nepalese commercial banks. The specific purpose of the study are to examine the relationship between non-performing loan ratio, cash reserve ratio, dividend payout ratio, capital adequacy ratio and profitability of BOK and NIBL and to examine the relationship between GPD growth rate, inflation and profitability of BOK and NIBL.

As per the major findings the ROA, CRR, NPLR, CAR, DPR, GDPR and IR have minimum range of 0.65, 6.82, 0.68, 11.57, 10.96, 0.20 and 4.14-whereas maximum range are 2.30, 19.20, 3.47, 14.92, 41, 7.75 and 9.90 respectively based on total ten number of observations. The mean value for the variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 1.57, 9.93, 1.73, 12.96, 28.43, 4.59 and 6.97 respectively. Moreover, the standard deviation for variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 0.62, 3.64, 0.96, 1.24, 12.35, 2.83 and 2.46 respectively. Finally, the variance for the variables ROA, CRR, NPLR, CAR, DPR, GDPR and IR are 0.39, 13.27, 0.92, 1.53, 152.50, 8.01 and 6.06 respectively.



In conclusion it can be observed that the dependent variable return on assets (ROA) which is a measure parameter for financial performance in this particular study, is positively correlated with independent variables that are cash reserve ratio (CRR) and gross domestic product ratio (GDPR) which implies that they move in the same direction. In other words, when one increases another one also increases and vice versa. Further, it can also be observed that the dependent variable return on assets (ROA) is negatively correlated with independent variables that are nonperforming loan ratio (NPLR), capital adequacy ratio (CAR) and inflation rate (IR) which implies the meaning that they move in the inverse direction. In other words, when one increases another one also decreases and vice versa.

### **Conclusions**

The one of the specific objective of this study is to examine the relationship between nonperforming loan ratio, cash reserve ratio, dividend payout ratio, capital adequacy ratio and profitability. Thus, it can be observed that the dependent variable return on assets (ROA) which is a measure parameter for financial performance in this particular study, is positively correlated with independent variables that is cash reserve ratio (CRR) which implies that they move in the same direction. In other words, when one increases another one also increases and vice versa. Further, it can also be observed that the dependent variable return on assets (ROA) is negatively correlated with independent variables that are non-performing loan ratio (NPLR) and capital adequacy ratio (CAR) which implies the meaning that they move in the inverse direction. In other words, when one increases another one also decreases and vice versa.

The second specific objective of the study is to examine the relationship between GPD growth rate, inflation and profitability. NPLR has positive relationship IR that implies they lead each other in the same direction however NPLR has got negative correlation with DPR and GDPR which states that they lead each other in the inverse direction. In this particular study, the credit risk management is mostly affected by the independent variable dividend payout ratio (DPR). Moreover, there is negative relationship between CAR and GDPR which reflects that they are negatively influenced by each other thus, they lead each other in the inverse direction. In other words, when one increases another one also increases and vice versa. However, CAR, DPR and IR have positively correlated that implies they lead each other in the same direction.

## **Implications**

On the basis of the findings of this particular study mainly it helps in proper managerial implications, policies implications, quality decision making by financial managers, show better way of investment to shareholders and academic researchers.

### ***Managerial Implications***

The development of good quality institution such as law and order, efficient bureaucracy, and democratic accountability are crucial to accelerate the development of commercial banks in Nepal. Many of the other variables can be used such as money supply, exchange rate etc. In order to take full advantage of the stock market, microeconomic variables like inflation, interest rate, should be reduced. The number of listed banks is increasing every year but the increase is not proportionate among the various sectors.

### ***Policy Implications***

Nepalese commercial banks have suffered from rumor based market and inadequate knowledge to investors, unavailability of the information. So programs must be launched to increase awareness. The performance of commercial bank is higher than the other sectors. So it is recommended to invest their investments in this sector. The stock exchange should be investor focused & market oriented along with strong operation with effective management.

### ***Financial managers***

On the basis of findings of this study, it helps formulating the plan and policies regarding the financial decision making. The financial manager is assisted through the findings of this study in terms of maintaining the quick ratio that finally increases the profitability of life insurance companies. Different plan and policies about boosting up the profitability of life insurance sector can be formulated on the basis of major findings of this study. The financial managers can be assisted through the finding of this study as per efficient conduction of operating task and generating cash and cash equivalent instruments.

### ***Shareholders and investors***

The findings also help to shareholders who are willing to invest money and money instruments in life insurances sectors. Sacrifice of money today for future money is investment. For the purpose of effective and fruitful investment this study helps to imply

better ideas through the findings. Shareholders normally invest money and money instruments such as a bond, share, debenture, marketable securities, treasury bill, commercial papers, trade credit, letter of credit, repurchase agreement etc.

### ***Future Scope***

The result of the study has uncovered new evidence in Nepalese perspective which is considered the study seems to be particularly the market participants. The findings of the study seem to be particularly useful for the equity investors and fund managers as they can use estimating proper ratios.