IMPACT OF CREDIT RISK MANAGEMENT ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANK

A Dissertation Summited to the office of the Dean, Faculty of Management in Partial Fulfillment of the Requirement for the Master's Degree (MBS)

By

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February,2024

CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **"Impact of Credit Risk Management on the Financial Performance of Commercial Bank** " the work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of this dissertation.

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Subash Thapa

Date: ....

REPORT OF RESEARCH COMMITTEE

Mr. Subash Thapa has defended research proposal entitled **"Impact of Credit Risk Management on the Financial Performance of Commercial Bank**" successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelines of supervisor Bhojraj Ojha and submit the thesis for evaluation and viva-voce examination.

Bhojraj Ojha   Dissertation Proposal Defended Date:

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Asso. Prof. Dr. Sajeeb Kumar Shrestha   Dissertation Viva-voce Date:

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APPROVAL SHEET

We, the undersigned, have examined the thesis entitled **"Impact of Credit Risk Management on the Financial Performance of Commercial Bank**" presented by Subash Thapa, a candidate for the degree of Master of Business Studies (MBS Semester) and conducted the Viva voce examination of the candidate. We hereby certify that the thesis is worthy of acceptance.

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ACKNOWLEDGEMENT

The thesis entitled **"Impact of Credit Risk Management on the Performance of Commercial Bank**" is prepared for the partial fulfillment of the requirement for the MBS degree. During the course, I worked with sincerity, honesty and diligence, as far as possible. However, beside my continual efforts, I also got unforgettable support from different people and organizations. This thesis would not have come to this shape without their co-ordination and support.

Firstly, I would like to pay my sincere gratitude to my respected thesis supervisor **Bhojraj Ojha** Shanker Dev Campus for her help and excellent guidance right from the time of selection of the topic and throughout the course of the study. And also, I would like to thank all other staffs of Shanker Dev Campus, and Tribhuvan University Central Library for providing various books, reports, journals and other publications.

After this, I would like to homage to my parents who headed me towards the light of education and path of truth. And special thanks to my friends for providing help, suggestions and motivation throughout the course of the study.

Lastly, I would like to conclude that I am very grateful to all of my well-wishers who have directly or indirectly contributed to accomplish this task.

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Thank you

Subash Thapa

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ABBREVIATION

ALR: Average lending rate

CAMEL: capital adequacy, asset quality, management, earnings, liquidity, and sensitivity.

CAR: Capital adequacy ratio

CDR: Credit deposit ratio

CER: Cost efficiency ratio

CRAR: Capital to Risk Assets Ratio

CRAR: Capital-to-risk (weighted) assets ratio

DFI: Development Financial Institution

EIR: Effective Interest Rate

EPS: Earning per share

FCB: Foreign Commercial banks

FFEC: Federal Financial Institutions Examination Council

FP: Financial Performance

GCG: Good Corporate Governance

GDP: Gross Domestic product

GMM: Generalized Method of Moment

HDFC: Housing Development Finance Corporation Limited

ICICI: Industrial Credit and Investment Corporation of India

ICICI: Industrial Credit and Investment Corporation of India

LR: Liquidity ratio

MCB: Mini Circuit Breaker

MQR: Management quality ratio

NBR: Nepal Rastra Bank

NIM: Net interest Margin

NPA: Non-Performing Asset

NPL: Non-performing loan

OER: Operating Efficiency Ratio

PCB: Private Commercial banks

RBBR: Risk based bank rating

ROA: Return on assets

ROE: Return on equity

SBI: State Bank of India

SCB: State owned Commercial banks

TAR: Total Advance Ratio

TNPL: Total non-performing loan

VND: Vietnamese dong

ABSTRACT

The completed on title impact of credit risk management in the financial performance of commercial banks. The general objective of study was impact of risk management on profitability of commercial banks with specific objectives of study were to assess the present status of credit and credit risk of Nepalese commercial banks, examine the relationship CAR, NPLR, MQR and CDR with ROA and ROE of Nepalese commercial banks and to analyze impact of CAR, NPLR, MQR and CDR on financial performance (ROA and ROE) of Nepalese commercial banks. Researcher had complete study under the descriptive and causal research design 3 commercial Banks taken as sample out of 20 in Nepal. The quantitative nature of data collected from the published source such as annual report, data from NRB, the collection method of data was non-probability. The data analysis method was descriptive such as means, standard deviation, correlation and regression. The results of the study were Return on assets, capital adequacy ratio, non-performing assets, and credit deposit ration. The correlation of return on with return on equity was insignificant, with capital adequacy ratio was negative low degree, with non-performing assets is negative insignificant, and with credit deposit ratio low degree negative correlation that is and management quality ratio is moderate level negative insignificant. Correlation of return on equity with capital adequacy high correlation significant, with non-performing assets is very high significant, with credit deposit ratio very high negative significant and with management quality ratio is very low. Regression line of CAR, NPL, CDR and MQR on ROA was insignificant. Similarly, regression line CAR, NPL, CDR and MQR on ROE was significant.

Keywords: Return on Assets (ROA), Return on Equity (ROE), Capital Adequacy ratio (CAR), Non-performing loan (NPL), Credit Deposit Ratio (CDR) and Management quality ratio (MQR)

CHAPTER-I

INTRODUCTION

1.1 Background of Study

The main risk to which banks are exposed during the typical course of lending and credit underwriting is credit risk. There are two methods for measuring credit risk under Basel II: the standardized method and the internal ratings-based method. The initial method, Thapa, has prescribed the standardized approach in simplified form for credit risk due to numerous inherent limitations of the Nepalese banking sector (2011). The simplest straightforward way to describe credit risk is as the possibility that a counterparty or bank borrower won't fulfill their obligations under the terms that have been agreed upon. By keeping credit risk exposure within reasonable bounds, credit risk management aims to increase a bank's risk-adjusted rate of return. Banks must control the credit risk. Both the risk of specific credits or transactions as well as the risk of the overall portfolio. Banks should take into account how credit risk and other risks are related. A thorough approach to risk management must include excellent credit risk management as it is crucial to the long-term survival of any banking firm. In general, how credit risk affects profitability (Kohn, 2012). Banks should be acutely aware of the necessity to identify, measure, monitor, and control credit risk as well as to make sure they have enough capital to protect themselves from these risks and that they are fairly reimbursed for any risks taken. The Basel Committee is encouraging banks supervisors worldwide with the release of this text to support sensible methods for controlling credit risk. Although the principles in this essay are most obviously applicable to the loan industry, they should be used in all situations where there is a credit risk (Madura, 2012)

A company may implement lax or strict credit standards, but either way, they should reduce bank debt costs and boost company profitability. The credit manager should adjust the credit terms after deciding on the credit standard. The duration of the credit period has a big impact on the cost of investing in accounts receivable, together with the credit period and discount. Both the cost of investing in accounts receivables and bad debt losses rise with a longer credit duration. In order to encourage consumers to make early payments, the credit manager may offer a monetary reduction. On the basis of the

company's previous standard industry norms, the credit manager must carefully set up both credit standards and credit terms. Any credit proposal contains some level of risk and profitability. If these factors are not adequately considered, a good customer could be mistakenly categorized as having poor credit and a bad customer as having good credit. Setting credit limits is aided by a thorough evaluation of credit risks. Characters, capacity, money, collateral, and conditions are used as credit score elements to assess credit proposals (Rawal et al, 2019). Banks heavily rely on deposits as their primary source of funding, utilizing these funds to support their lending activities. However, before extending loans to customers, banks must diligently assess the financial health of potential borrowers to gauge their creditworthiness and repayment capability. While traditional methods involve scrutinizing income and balance statements, contemporary practices emphasize the importance of credit analysis. A pivotal aspect of this assessment is the thorough examination of a borrower's credit history, which encapsulates past borrowing behavior, payment patterns, and any instances of defaults or bankruptcies. Credit reports, sourced from credit bureaus, offer valuable insights into an individual's or company's creditworthiness, distilled into a numerical credit score. This score serves as a key determinant in the decision-making process. Beyond credit reports, banks consider various financial indicators to gauge credit risk. Analysis of cash flow, debt-to-equity ratio, liquidity, and profitability provides a comprehensive understanding of the borrower's financial stability and ability to meet obligations. Additionally, banks scrutinize the purpose of the loan and the potential return on investment, aiding in the evaluation of the project or business for which the loan is requested. A holistic credit analysis is imperative for banks to make well-informed lending decisions, ensuring responsible practices and risk management. By assessing creditworthiness thoroughly, banks strike a balance between supporting economic growth through lending and safeguarding the stability of the financial system, thereby protecting the interests of depositors (Paudel et al, 2012).

Profitability is the result of several company activities and strategies. It evaluates how well the business is handled and operated. The owners, managers, and creditors of the company are interested in its financial stability. Owners are keen to know their profits,

while management are worried about their operational efficiency. Booth owners and managers create profitability ratios since their expectations are evaluated based on the profit the firm makes. Below is a collection of management ratios that are used to determine how profitable a firm is. (Paudel. et. al, 2012).

Profitability is a sign of how effectively a business organization is operating. Profitability ratios assess the management's general effectiveness based on the revenue and investment return. Higher profitability ratios indicate better managerial effectiveness. The relationship between total sales less the cost of items sold is shown by gross profit. It demonstrates management effectiveness. The link between sales and overall costs, such as the cost of items sold and other indirect costs to the business, is represented by net profit. Profitability of operations is a factor in managerial effectiveness. Higher profitability always indicates better management effectiveness (Koirala, et. al, 2010).

Financial statement analysis, according to Bhandari (2018), is financial performance analysis plays a crucial role in evaluating a company's strengths and weaknesses, serving as a fundamental tool for decision-making. The purpose of this analysis is to discern the financial health of a company, offering valuable insights into its overall condition. Two key components of financial statements are the income statement and the balance sheet. The income statement showcases operating and non-operating results over a specific period, while the balance sheet reveals the financial position at the end of an accounting period, encompassing assets, liabilities, and equity. Financial statements are time-specific, presenting data for a particular period and as of a specific date. To comprehensively assess a company's progress, top management and financial managers seek to understand whether it is advancing positively or encountering challenges. Comparative financial statements, crucial for trend analysis, facilitate the comparison of current year figures with previous years, shedding light on the company's evolving trajectory. Long-term success in investing requires a solid plan and a deep understanding of financial statements, which act as vital instruments in fundamental analysis. By evaluating management effectiveness and operational efficiency, financial statements empower decision-makers and investors to make informed choices that contribute to sustained success.

1.2 Problem statement

Thapa (2011) for the sustainability of the banking sector BASSEL has formulated some regulatory provision to improve and manage financial position of bank effectively. In the process operation of banks, there are large number of credit risk about loan and management of capital, credit, loan and advance, liquidity management, non-performing loan of bank etc. Increasing non-performing loan, inadequate capital ratio, management quality ratio, and credit deposit ratio influence financial performed e of bank. Bhattarai (2019) the bank's performance monitoring, analysis, and supervision need special analysis of their operations and activities from the viewpoint of different audiences such as owners, clients, regulators, and management itself. Different version of financial statement items as initial data sources. Such analysis is not found in case of Nepalese context with latest information. Review of several studies points towards the fact that the robustness or weakness of a credit risk management has a negative impact on the bank performance. Weak credit risk management platform is a recipe for a higher level of NPLs and this ultimately leads to a poor financial performance of commercial banks

The study on credit risk management in Nepalese Public Sector Banks underscored critical challenges within their credit risk systems, characterizing them as "grey areas" that demanded immediate attention to curb the escalation of non-performing assets (NPLs) and bolster profitability. The research revealed that these identified issues collectively contribute to the establishment of a frail credit risk management framework, leading to heightened levels of NPLs and subsequent decreases in bank profitability. Furthermore, the study highlighted the crucial role of non-performing assets in influencing the relationship between credit risk management and bank performance, noting that an upsurge in NPLs directly correlates with a deterioration in the banks' balance sheets and, consequently, diminished overall performance. Through an extensive analysis of diverse studies employing varied datasets, the review consistently demonstrated a substantial and noteworthy connection between credit risk management practices and the performance of Nepalese Public Sector Banks. Ultimately, the research

emphasized the urgency of addressing the identified grey areas to effectively mitigate non-performing assets and enhance the overall financial health of these banks. (Ahsan, 2018).

Among other variables, total non-performing loans (TNPL) had the greatest mean, median, and standard deviation. Nonetheless, our study's sample Nepalese government and private banks have more diverse TNPLs (Manandhar, 2019). NPLs and the capital adequacy ratio (CAR) were the credit risk metrics employed in this study; bank-specific criteria were the cost-efficiency ratio (CER), average lending rate (ALR), and liquidity ratio (LR). Conversely, financial success was measured using return on equity (ROE) and return on asset (ROA) (Siddique, et.al, 2021)

Bank confidently can give only housing loan, hire purchase or overdraft of certain limit to an individual, but still it gets feared to invest in a big project solely.

i. What is the present status of credit and credit risk of Nepalese commercial banks?
ii. Is there any relationship between credit risk management factor (CAR, NPLR, MQR and CDR) and financial performance (ROA and ROE) of Nepalese commercial banks?
iii. Is the impact of credit risk management on financial performance of Nepalese commercial banks?

1.3 Objectives of the study

The major objectives of the study are to examine the credit management of the Everest Bank and Himalayan Bank Ltd, and Siddhartha Bank. The specific objectives of the study are listed below:

i. To assess the present status of credit and credit risk of Nepalese commercial banks.
ii. To examine the relationship CAR, NPLR, MQR and CDR with ROA and ROE of Nepalese commercial banks.
iii. To analyze impact of CAR, NPLR, MQR and CDR on financial performance (ROA and ROE) of Nepalese commercial banks.

1.4 Rationale of the study

Credit is the major source of income in any commercial banks. There is no doubt that the profit earned by any bank depends on the volume of the good lending. study on commercial banks' lending practice carry a great significance to shareholders, professionals, bankers themselves and the student eager to know about lending practices and their management. This study is based on measuring the efficiency of Everest and Himalayan bank Ltd. It is significance to shareholders, board of bank, customers, financial institution and stock exchange investor also.

    i.   The study helps to analyze risk and financial position of sample commercial bank.

    ii.   The study significant for maintain and improve the financial soundness through finding weakness, lunch the new strategy.

    iii.   Formulate new strategy, policy and plan to manage risk effectively

    iv.   To run the bank and under the regulatory rule of WASSEL III.

1.5 Limitation of the study

The benefits and limitations are the two faces of a same coin. Each and every research work has more or less limitations. To make this study precise, meaningful and valuable some limitations are made so that the objective of this study is achieved within limited time, resource and information. Some limitations of this study are listed below:

    i.   The study is limited to only three commercial banks of Nepal, namely Everest Bank Ltd. and Himalayan Bank Ltd, Siddhartha Bank Ltd.

    ii.   In this study only selected financial and statistical tools and technique are used.

    iii.   The study based on only the past years periods since 10-year data from year 2012/13 -2021/22.

    iv.   The study is based only secondary data such as annual reporet , financial statements.

    v.   The study has been completed for the academic purpose.

    vi.   There was limitation of time, resources to compete the study.

CHAPTER-II

REVIEW OF LITERATURE

It requires going over and evaluating previously published data in the area of interest. Focusing a researcher's broader areas of interest on a particular study subject is advantageous. A literature review may give a researcher suggestions for the technique of his investigation. The researcher is aware of the methodology and theoretical foundations. It is important to demonstrate how the subject under examination relates to earlier research projects. In some subject areas, it is essential to situate an issue within a theoretical framework; in these situations, the underlying theory must also be discussed. When you are initially scanning a field, work your way up from broad to particular to main sources of information.

2.1 Theoretical Review

The process of discovering, evaluating, and controlling risks to an organization's resources and profits is known as risk management. These risks have many different causes, such as monetary unpredictability, legal responsibilities, technological problems, strategic management blunders, accidents, and natural calamities. Monitoring possible threats carefully is a key component of business risk management. A risk is anything that has the potential to have a negative influence on your company, and the majority of risks have monetary repercussions. Identifying these problems and creating plans to mitigate or deal with them are the goals of risk management. Utilize scenario planning to prepare for potential events that your company may encounter.

Financial ratio analysis, which includes trend analysis and industry benchmarking based on information from your financial statements, is the greatest approach to keep an eye on risks and the 'triggers' that produce them.

For instance, if you find that your sales have decreased, you should investigate why by analyzing your financial accounts, looking for any trends, and comparing your numbers to industry standards. You may solve the problem and control any risks involved by doing this.

Credit risk management was chosen as the independent variable for the study since it was thought that the robustness of such a system might change or be affected by different financial institutions. The research mainly uses bank performance as the main component to examine how changes to the credit risk management systems have affected it. It entails evaluating research studies or other pertinent arguments in the study's connected field so that all prior studies, their findings, and flaws can be understood and future research may be carried out. The fundamental motivation for conducting a thorough evaluation of prior research is to understand the findings of studies conducted in fields where similar concepts and approaches have been effectively used, as well as to do not look into issues that have definite solutions.

Risk is characterized in terms of the uncertainty surrounding financial loss and ambiguity. A risk is described as a potential scenario or event that could have a negative impact on the business. The more predictable the return from assets, the more variable the return on assets considered to be riskier investments. The financial institution faces numerous risks when operating within the financial system. The main risk that banks are exposed to during the typical lending and credit underwriting process is credit risk. There are two methods for calculating credit risk under Basel II. The IRB technique based on internal rating and the standardized approach. Due to a number of the Nepalese financial system's inherent limitations, the conventional method in its condensed form condenses. The first strategy has specified the standard system SSA (Bista, 2015).

Credit Risk: Credit risk is the likelihood that some of a bank's assets will default. Credit risk refers to the likelihood that a debt may lose value over time, possibly to the point of becoming worthless. A few ratios that show the credit risk of a bank are the ratio of non-performing assets to total loans and leases, the ratio of net changes in loans to total loans and leases, and the ratio of total capital equity.

Operational Risk: Basel II introduced a number of important improvements, including the requirement that banks keep capital to manage operational risk in addition to credit and market risk. Losses resulting from staff fraud, product flows, accounting errors, computer breakdowns, terrorism, and natural disasters that could harm a bank's tangible assets and impair its capacity to communicate with customers are examples of this sort of

risk exposure. Customers. Bankers must demonstrate that they are utilizing effective measures to reduce operational risk in order to lower their capital requirements. These measures include adequate insurance coverage, backup, service capability, effective internal audits, high-quality contingency plans, and an effective management information system (Thapa, 2012).

Market Risk: Market risk is the possibility of losses in both on- and off-balance sheet positions as a result of unfavorable price changes in the market. Foreign exchange risk, an instrument tied to interest rates, is related to investments in stocks and commodities.

Solvency Risk: Long-term risk to the bank is referred to as solvency risk. Typically, stockholders' response to a large number of poor loans or loan losses is what causes this. Interest rate spreads, price growth, equity capital to total assets, borrowed money to total liabilities, and equity capital to risk assets are several ways that capital risk is quantified.

Liquidity Risk: The amount of liquid assets, such as cash and government securities, that a financial institution maintains in relation to its overall assets indicates how well that institution has accounted for liquidity risk.

Operating Risk: Working effectiveness the risk management response is to increase how well the company manages its resources. Installing new labor-saving equipment may be necessary to boost staff' transaction processing productivity. It might also imply a deliberate choice to increase the organization's overall size in order to capitalize on any untapped scale economies. It is computed by dividing total operating costs by total operating income.

The overall goal of this research is to identify the relationship between credit risk management and bank performance and to examine the effects of moderating and intervening variables, which in this case are macroeconomic conditions and the quantity of nonperforming loans. The research was able to determine that the majority of studies that just consider two variables are probably to arrive at specific conclusions or results that would significantly change once other important variables are taken into account. Few research were able to look past the two elements' overlap, despite the fact that many have attempted to study the connection between credit risk management and bank

performance. However, it is clearly obvious that the moderating and intervening variables must be taken into account in research that aims to be both exhaustive and comprehensive. First, it's crucial to study and evaluate the major components of a credit risk management system in order to gauge its robustness.

It is crucial to assess the system's level of sophistication, its foundation in a trustworthy ICT platform, and whether it is staffed by personnel who possess the necessary qualifications. In order for each bank or financial institution to ultimately receive a score based on the process, these crucial aspects of the systems are identified, and a very clear scoring methodology is established. The bank performance measurement needs to be extremely well specified, too. The majority of research focused on just one component of bank performance, like capital sufficiency, asset quality, profitability, etc. However, this study suggests a more comprehensive instrument or proxy that can assess a bank's performance. The more comprehensive and provides an overall score based on an evaluation of the financial resources, asset quality, management, earnings, liquidity, and market sensitivity. When comparing the outcomes of the banks or other financial institutions, the findings are considered to be more representative. A thorough analysis of numerous studies indicates that the performance of the bank is negatively impacted by the credit risk management's robustness or weakness. A poor credit risk management system will inevitably result in a higher level of non-performing loans, which will then negatively impact the financial performance of commercial banks (Thapa, 2012).

According to Ahsan's (2018) study on the issues and challenges in credit risk management in Nepalese public sector banks, there are a number of gray areas in credit risk systems that require prompt attention and action if the bank's non-performing assets are to be reduced. According to the study, these ambiguous regions cause a weak credit risk system, which in turn causes large NPLs and, as a result, poor profitability or bank performance. The study also discovered that the amount of NPLs has an impact on how credit risk management and bank performance are related. Therefore, an increase in NPLs causes the balance sheets of businesses to worsen, which in turn causes banks to perform poorly. After a thorough analysis of numerous research that combined primary and secondary data, the main conclusions of the review were that there is a connection

between credit risk management and bank performance based on secondary data. The study looked at how the macroeconomic environment's changes affected the link between the independent and dependent variables.

Based in a powerful Asian economy, Japan, and starting in the 1990s, Inaba et al. (2005) looked at the connections between the rise in NPLs and real economic performance. Additionally, the study found that some cyclical economic downturns led to an increase in NPLs. Second, because the banking industry was destroyed by the rising NPLs, real economic performance was skewed. Dietrich and his team looked studied how internal bank characteristics, macroeconomic factors, and industry-related effects, which have an impact on many banks, interact.

The bank regulatory authorities developed the Uniform Financial Institutions Rating System (UFIRS) in 1979. The financial ratio framework for evaluating financial institutions was proposed by the Basel Committee on Banking Supervision of the Bank of International Settlements (BIS) in 1988. An international bank rating system called the financial ratio rating system assigns institutions a score based on the performance of five different financial institution operations: capital sufficiency, asset quality, management soundness, earnings and profitability, and liquidity (Datta, 2012).

A growing number of banks have improved their financial performance by embracing the notion of mergers and acquisitions. By focusing on the top line and bottom line, banks have enhanced their profit while reducing their operational costs. Most banks employ financial ratio grading as a method of performance assessment worldwide. The supervisory rating system was developed and initially implemented in the USA for internal monitoring in order to assess banks' overall financial status. It is now employed for both on-site and off-site monitoring functions. Financial ratios analysis, benchmarking, performance against budgeting, or a combination of these approaches have typically been used to gauge the financial performance of banks and other financial organizations (Raiyani, 2010).

In this study, five categories of ratios according to financial ratio system are applied and are summarized in relative model of that category to define financial system in any group of ratios. Those categories as pointed are:

Capital (C) The first variable group is the indicators of capital and relevant indicators those present capital, the ratio of capital to assets and show organization strengths.

Asset Quality (A) Asset quality ratios are one of the main risks that banks face. As loans have the highest default risk, an increasing number of non-performing loans shows a deterioration of asset quality.

Management Quality (M) as management is a qualitative issue, such as the ability for risk taking; it is usually difficult to measure the quality of management. The management quality of a bank can be measured by some important ratios those are used in CAMEL model. Earning Ability (E) Earning is the most important performance measurement of banks. The ratios of earning and relative financial ratios are calculated in this study.

Sarker (2005) Liquidity risk measures an institution's ability to meet unanticipated funds that are claimed by depositors. Liquidity ratios are expected to be both positively and negatively related to the likelihood of failure those are set in model.

- Proper structure of the management
- Qualitative human resource management
- Customer care department
- Use of modern information technology
- Adequate management of loan and advances
- Fair decision making
- Proper communication system
- Working atmosphere and management

The review of study going to finding, what is the status of credit risk on financial performance. The relationship between CAR, NPLR, MQR and CDR with ROA and ROE in banks. The study focused on, which factor affect financial performance of banks.

Capital Adequacy

Paudel (2012). A financial institution must retain capital that is proportionate to the kind, scope, and management team's capacity to recognize, assess, monitor, and manage the institution's risks. When assessing the sufficiency of capital, the impact of credit, market, and other risks on the institution's financial situation should be taken into account. The kinds and amounts of risk present in an institution's operations will influence how much

capital may need to be held at levels above the minimums required to reflect the potential negative effects these risks may have on the institution's capital.

Asset quality

Thapa (2012) the credit risk level connected with the loan and investment portfolios, other real estate owned, other assets, off-balance sheet transactions, and other assets is represented by the asset quality rating. This also reflects management's capacity to recognize, quantify, track, and manage credit risk. The appropriateness of the allowance for loan losses and the exposure to counterparty, issuer, or borrower default under express or implicit contractual obligations should be taken into account when evaluating the asset quality. Other risks, including but not limited to operating, market, reputation, strategic, or compliance concerns, should also be taken into account since they may have an impact on the value or marketability of an institution's assets.

Management

Bhattarai (2019) this rating takes into account the board of directors' and management's abilities to recognize, quantify, monitor, and control the risks associated with an institution's operations and to guarantee a financial institution's safe, sound, and efficient operation in accordance with applicable laws and regulations. However, they must give clear direction regarding acceptable risk exposure levels and make sure that the proper policies, procedures, and practices have been developed. In general, directors do not need to actively participate in day-to-day operations. The creation and implementation of policies, processes, and practices that transform the board's goals, objectives, and risk tolerance into responsible operating standards is the responsibility of senior management. Management methods may need to address some or all of the following issues, depending on the type and scope of an institution's activities: Management techniques may need to address some or all of the following risks: credit, market, operating or transaction, reputation, strategic, compliance, legal, liquidity, and other risks. This depends on the nature and extent of an institution's activities. Active management oversight by the board of directors and management, competent staff, adequate policies, procedures, and controls that take into account the institution's size and sophistication, upkeep of a suitable audit program and internal control environment, and efficient risk monitoring and management information systems are all indications of sound management practices.

Earnings

Thapa (2012) this grade takes into account elements that could have an impact on the sustainability or quality of earnings in addition to the quantity and trend of earnings. Both the quantity and the quality of earnings can be impacted by high levels of market risk that could unnecessarily expose an institution's earnings to interest rate volatility or by excessive or improperly managed credit risk that could result in loan losses and require additions to the allowance for loan losses. Unnecessary reliance on exceptional gains, one-time events, or advantageous tax consequences can also lower the quality of earnings. Incapability to predict or manage capital and operating costs, badly implemented or poorly advised business strategy, poorly managed or uncontrolled contact with other dangers.

Liquidity

Thapa (2012) When determining if a financial institution's liquidity situation is adequate, it is important to take into account its size, complexity, and risk profile as well as its existing and potential sources of liquidity in relation to funding requirements. The general rule is that an institution's funds management procedures should guarantee that it can maintain a level of liquidity sufficient to meet its financial obligations on time and to meet the legal banking needs of its community. Practices should demonstrate the institution's capacity to deal with unforeseen changes in funding sources and to respond to shifting market conditions that could impair the ability to quickly sell assets with little loss. Additionally, money management In order to avoid maintaining liquidity at a high cost or through an excessive reliance on funding sources that might not be available during times of financial strain or unfavorable changes in market circumstances, obligations, or other liquidity needs, best practices should be followed.

The FFIEC press release from 1996 breaks down each component rating description into three sections: an introduction, a list of the key evaluating factors that apply to that component, and a brief explanation of each numerical rating for that component. To strengthen the relationship between components, certain of the assessment factors are reinterred under one or more of the other components. There is no particular ranking of

the evaluation criteria for any component rating. According to a news release from the FFICE, the CAMEL components are described as follows (FFICE, 1996).

The Capital Adequacy Ratio (CAR), also known as the Capital to Risk Assets Ratio (CRAR), serves as a pivotal measure of a bank's financial robustness in relation to its risk exposure. By evaluating the ratio of a bank's core capital to its risk-weighted assets, CAR gauges the institution's ability to absorb potential losses stemming from various risks, including credit and operational risks. National regulators closely monitor this metric to establish and enforce minimum capital requirements, ensuring financial stability and safeguarding depositors. The calculation involves dividing core capital by risk-weighted assets and expressing the result as a percentage. Adequate CAR is imperative for a bank to weather economic downturns, demonstrating its resilience and adherence to regulatory standards while covering a spectrum of risks in its operational landscape. In the simplest formulation, a bank's capital is the "cushion" for potential losses, which protects the bank's depositors or other lenders. Banking regulators in most countries define and monitor CAR to protect depositors, thereby maintaining confidence in the banking system. CAR is similar to the leverage; in the most basic formulation, it is comparable to the inverse of debt-to-equity leverage formulations, although CAR uses equity over assets instead of debt-to-equity; since assets are by definition equal to debt plus equity, a transformation is required. Unlike traditional leverage, however, CAR recognizes that assets can have different levels of risk.

The capital requirement is a bank regulation, which sets a framework on how banks and depository institutions must handle their capital. The categorization of assets and capital is highly standardized so that it can be risk weighted. Internationally, the Basel Committee on Banking Supervision housed at the Bank for International Settlements influence each country's banking capital requirements. In 1988, the Committee decided to introduce a capital measurement system commonly referred to as the Basel Accord. This framework has been replaced by a significantly more complex capital adequacy framework commonly known as Basel II. After 2012 it will be replaced by Basel III. While Basel II significantly alters the calculation of the risk weights, it leaves alone the calculation of the capital. The capital ratio is the percentage of a bank's capital to its risk-weighted assets. Weights are defined by risk sensitivity ratios whose calculation is

dictated under the relevant Accord. Each national regulator normally has a very slightly different way of calculating bank capital, designed to meet the common requirements within their individual national legal framework. Most developed countries implement Basel I and II, stipulate lending limits as a multiple of a bank's capital eroded by the yearly inflation rate (Srivastava, and Nigam 2010).

2.2 Empirical Review

Empirical review refers to the review of previously conducted research and article of scholars related to study. Various studies are conducted by the various scholars in various countries and banking sector about impact of non-performing loan. The empirical review of various research studies is as:

2.2.1 Review of Journal Articles

Hang (2023) the study under consideration delves into the critical realm of credit risk within the commercial banking sector in Vietnam, particularly against the backdrop of the persistent Covid-19 epidemic. It underscores the indispensable nature of credit activities for commercial banks, emphasizing the need for effective risk management strategies to ensure the safety and sustainability of such operations. Notably, the year 2021 witnessed a 26% surge in bad debts, totaling more than 113 trillion VND across 30 listed banks, as compared to the preceding year. Despite the ongoing public health crisis, Vietnam has set a dual objective of combatting the outbreak while simultaneously pursuing socio-economic development, thereby underscoring the continued significance of credit activities. The study adopts a comprehensive approach, employing primary data derived from direct questionnaires distributed among 300 credit risk managers through a randomized process. This data-driven methodology involves the examination of descriptive statistics, alongside comparisons and synthesis of statistical reports emanating from various commercial banks. A distinctive facet of this research lies in its coverage of over 60% of commercial banks affected by Covid-19, addressing risks stemming from both subjective and objective factors. Ultimately, the anticipated outcomes of the study are poised to furnish actionable policy recommendations geared towards mitigating credit risks for Vietnamese commercial banks post the Covid-19 pandemic.

Nurwulandari et al. (2022) analyzed objective is to examine the relationship between Indonesian commercial banks' financial stability and financial performance while controlling for excellent corporate governance. The risk-based bank rating (RBBR) technique is used in this study together with secondary data to analyze the annual reports of 41 commercial banks that served as samples from 2014 to 2019. Non-Performing Loans, Loan Deposit Ratio, Net Interest Margin, Operating Efficiency Ratio, Capital Adequacy Ratio, Return on Assets, and Good Corporate Governance are the ratios that were employed in this study. The findings supported the hypothesis that OER had a direct negative and substantial impact on ROA whereas NIM had a direct positive and significant impact on ROA. Direct GCG testing reveals a NPL and OER have a negative and large impact, while NIM has a positive and significant impact. Further evidence that GCG can moderate the impact of NPL and OER on the financial performance of Indonesia's conventional banks comes from indirect testing with intervening factors. Additionally, it has been demonstrated empirically that GCG enhances the NIM's beneficial and considerable impact on ROA. This conclusion emphasizes how crucial sound corporate governance is to enhancing the financial stability of Indonesian commercial banks. Theoretically, the findings would also suggest the need for research into governance practices and morality as areas of strategic corporate governance challenges.

Oudat & Ali (2021) analyzed selected financial risks and financial performance of commercial and investment banks listed on Bahrain stock exchange. However, selected financial risks contain capital risk, liquidity and exchange rate risk, meanwhile the financial performance measured by return on equity. To achieve the research purpose the panel regression analysis of data approach was employed. While, for the data were collected from annual financial reports for the banks. An interesting finding was had been found for both models as concluded to there is insignificant relationships between capital risks, liquidity risks and exchange rate risk and financial performance for both models except the liquidity risk for investment banks found to be significant relationship with financial performance. Due to several limitations of the current research different

suggestions might be driven for further researches such as conducting researches on another financial risks, another financial institutions and other financial performance measurements that not be covered in current research.

Siddique et al. (2021) captured the effect of credit risk management and bank-specific factors on South Asian commercial banks' financial performance (FP). The credit risk measures used in this study were NPLs and capital adequacy ratio (CAR), while cost-efficiency ratio (CER), average lending rate (ALR) and liquidity ratio (LR) were used as bank-specific factors. On the other hand, return on equity (ROE) and return on the asset (ROA) were taken as a measure of FP. Secondary data were collected from 19 commercial banks (10 commercial banks from Pakistan and 9 commercial banks from India) in the country for a period of 10 years from 2009 to 2018. The generalized method of moment (GMM) is used for the coefficient estimation to overcome the effects of some endogenous variables. The results indicated that NPLs, CER and LR have significantly negatively related to FP (ROA and ROE), while CAR and ALR have significantly positively related to the FP of the Asian commercial banks.

Khalid, et al. (2021) examined credit risk management effect on financial performance of Sudanese banking sector. Every bank's financial report for 10-year period, had been employed for the study. Return on Equity, or ROE, was the performance metric, and panel regression was employed. In the meanwhile, NPLs (non-performing loans) and CARs (capital adequacy ratios) were used as credit risk management indicators. The findings demonstrated that credit risk management has a major impact on Sudanese banks' profitability. Based on available data, changes in the capital adequacy ratio and non-performing loans impact banks' profitability by 57%. The study also demonstrates that, while not statistically significant, the capital adequacy ratio and the banks' financial performance have a favorable association. Moreover, there is a strong association between non-performing loans and the banks' financial performance.

Agyemang (2020) investigated the financial performance of listed Banks in Ghana. Financial ratios that are used to evaluate credit performance, capital structure/adequacy, liquidity, and profitability. The panel data was evaluated using bar charts and line graphs, and the results show that net interest margin (NIM) is the most accurate indicator of profitability when compared to ROA, ROE, ROD, and NIM. The study's conclusions also

demonstrated how concerning and frustrating these banks' liquidity positions are, since the majority of them have serious liquidity problems that put depositors at risk of losing their money. The results once more demonstrated that the banks' credit performance is appalling due to poor loan outcomes from inadequate and inefficient credit evaluations. It was clear from analyzing the capital adequacy ratio that the banks were extremely.

Koley (2019) analyzed of financial position and performance of public and private sector banks in comparative study on bank. The objective of the study was to identify financial position and performance of the selected banks and to examine whether any significant difference exists in their performance. The study is based on secondary data which has been collected from annual reports of the selected banks. The financial stability of the chosen banks has been evaluated using the CAMEL model. The study's result was reached by using the t-test to key criteria such as capital sufficiency, asset quality, management effectiveness, earnings ability, and liquidity. Both banks have greater capital and capital adequacy ratios than the Basel standards for banks. Thus, they meet the needs of both SBI and HDFC banks. Compared to HDFC, SBI has a larger debt-to-equity ratio. In addition to being more exposed to financial risk, SBI is attempting to benefit from financial leverage. HDFC strives to give its depositors a strong margin of safety and is very risk averse. Higher asset turnover ratios are found at HDFC Bank. Therefore, it has the potential to bring in more money. In relation to the specified total asset value. The way Nabil Bank uses its assets is less effective. Compared to HDFC Bank, Nabil Bank has a greater lending ratio. In other words, SBI is taking greater chances than HDFC. SBI has a greater net NPA to net advance ratio than HDFC.

Qais & Boris (2018) studied was in financial performance of commercial bank in Afghanistan. This study examined the factors that influence profitability in Afghanistan's commercial banking sector. All commercial banks, whether they are owned by the state or privately. The combined data aided in performing the research and formulating the conclusion. With the exception of the liquidity variable, the results demonstrate that internal bank characteristics significantly affect profitability, whereas external economic factors were not significant at the 5% confidence level. Therefore, managerial effectiveness rather than the macroeconomic GDP component determines the profitability of Afghan banks. It has been determined that bank-specific characteristics, as opposed to

the economy as a whole as shown by the GDP growth rate, significantly contribute to bank profitability. The CAMEL framework, enough capital, loan portfolio quality, management effectiveness, and liquidity have a favorable correlation with bank profitability. Additionally, while not statistically significant, the GDP growth rate shows a favorable correlation with the profitability of Afghanistan's commercial banks as an external macroeconomic factor affecting financial performance.

Mustafa & Taqi (2017) studied was in financial performance evaluation of Punjab national bank. The objectives of the study were to examine the profitability position of PNB, measure impact of deposits and advances on the profitability of the bank. The present study examines the impact on the financial performance of Punjab National Bank which was taken as a sample for the purpose of analysis of financial performance. Total deposits and total advances were considered independent variables, whereas net profit was considered a dependent variable. The bank's profitability was shown to be significantly and adversely impacted by deposits and advances. From a practical standpoint, bankers and managers may use this study's findings to inform their decision-making when trying to enhance financial performance and create policies that will support a strong financial system. The report also suggests actions that the bank might take to guarantee the stability of its operations. The research is anticipated to provide the following benefits to banking management: it might assist in directing decision-makers' attention toward the key banking operations that could boost the financial The bank's performance standing and ranking in relation to other banks. The management will also benefit from the financial data from this study when creating plans and financial strategies. From an academic standpoint, this research offers a fresh way to assess the financial performance of top commercial banks. The study's findings may also be added to the body of current literature and support future research efforts.

Jaiswal & Jain (2016) compared and analyzed financial performance of the bank in India. The banking sector is very important for the economic development of a country. Traditionally the banks worked as finance depositor and finance provider only but presently as the scenario have changed and many policies and other technical changes have become the part of economies therefore now banks also play many roles in the development of economy. The study is an attempt to analyze the financial performance of

SBI and ICICI banks. One of the top public sector banks in India is the State Bank of India, or SBI as it is commonly called. SBI has 57 zonal offices and 14 local head offices at strategic locations around the nation. The second-biggest and most prestigious private sector bank in India is called ICICI Bank. The study's approach is both analytical and descriptive. The secondary nature of the data was gathered from a variety of papers these banks published online. Ratio analysis served as the foundation for the comparison of these two banks' financial performances. The findings showed that SBI is outperforming ICICI Bank in terms of performance and financial stability. Additionally, SBI is in a superior market position than ICICI in terms of pricing and earnings per share ratio per share and dividend payout ratio; nonetheless, as compared to Nabil bank, ICICI bank is doing better in terms of NPA and provision for NPA.

Nandhini and Sivasakthi (2015) analyzed of public sector bank in India. Explained that banking sector is backbone of the Indian economy and pays meaningfully to growth and development. This research examined, using the well-recognized CAMEL framework, the financial soundness of a subset of public sector banks. The study looks at how the different CAMEL rating model parameters behave and how consistently they do so over the course of the investigation. Based on a financial study, certain public sector banks with small flows in particular sectors were deemed to have basic soundness. They went on to say that central banks all over the world have enhanced the caliber and methods of their supervision as a result of the significant developments that have occurred in the banking industry in recent years. In evaluating the function of the banks, many of the developed countries are now following uniform financial rating system CAMEL rating along with existing procedures and techniques. The ratings that various banks have received based on these five factors are used to rate them. The findings demonstrated a statistically significant difference in the CAMEL ratio of India's selective public sector banks, indicating a distinction in the selective public sector banks' overall performance. In addition, the writer concluded that the banks with least rank in need to improve their performance to come up to the desired standards

Shah et al. (2015) the aim of this research study was to make comparisons of financial performance by using financial ratios and measures of commercial banks operative in

Pakistan. For study and assessment, all commercial banks are chosen. Based on factors like bank size, spread ratio, earnings per share (EPS), return on equity (ROE), and return on assets (ROA), this study ranks commercial banks. The State Bank of Pakistan's results and all of the study's conclusions are exactly the same. Based on every financial measure pertaining to bank size, spread ratio, earnings per share (EPS), return on assets (ROA), return on equity (ROE), and other factors, the study indicates that every commercial bank has a unique conclusion. Habib Bank Limited is the largest bank by size, followed by National Bank of Pakistan in second place, United Bank Limited in third place, and First Women Bank Limited in fourth place. In terms of return on assets (ROA), MCB Bank Limited is ranked highest, followed by First Women Bank Limited, Allied Bank Limited, and Summit Bank Limited. In terms of return on equity (ROE), Allied Bank Limited is leading, followed by MCB Bank Limited, Bank Al Habib Limited, and Summit Bank Limited. Standard Chartered Bank Limited is ranked highest on the spread ratio, followed by MCB Bank Limited in second place, United Bank Limited in third place, and The Bank of Punjab in last place. According to EPS, MCB Bank Limited is ranked first, followed by Habib Bank Limited, United Bank Limited, and Summit Bank Limited.

Islam, (2014) evaluated the financial performance of banks sector in Bangladesh. Explained that a competent process of banking sector enables the smooth financial resources intermediation of an economy. Economic growth was contributed greatly by the efficiency of banking sector in resources generation and its proper allocation. The smooth and efficient operation of banking sector also helps to reduce risk of failure of an economy. The study covered the period from 2004 to 2011 and included State-Owned Commercial Banks (SCBs), Development Financial Institutions (DFIs), Private Commercial Banks (PCBs), Foreign Commercial Banks (FCBs). The study explored that to assess the performance of Bangladesh's banking sector, a few key ratios that are the most significant within the full CAMEL ratio were examined. DFIs are the most vulnerable of the four types of banks that operate in Bangladesh; the other three categories are less risky. The provision maintenance ratio, ROA, ROE, and liquidity ratio in DFIs are all too low, while the ratio of NPL to total loan, CRAR, and EIR are all too high. These factors adversely affect the performance of Bangladesh's banking sector as a

whole. While PCBs and FCBs exhibit every symptom of good operation, SCBs also display a tendency toward better performance.

Meta Table

S.N	Writer & Date	Article	Objectives	Methodology	Finding
1	Hang (2023)	Policy recommendations for controlling credit risks in commercial banks after the Covid-19 pandemic in Vietnam	To analyze Analyzes some current problems and leading causes of the credit risk of commercial banks.	Descriptive research design	Covid-19 affects more than 60% of commercial banks.
2	Nurwulandari et al (2022)	Risk Based Bank rating and financial performance of Indonesian Commercial Banks with GCG as Intervening Variables.	To analyze the effect of the financial health of Indonesian commercial banks on financial performance with good corporate governance as an intervening variable.	Descriptive and analytical research design	NPLs and CER are significantly negatively associated with financial performance
3	Mohammad Salem Oudat & Basel J. A Ali (2021)	The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks	To analysis selected financial risks and financial performance of commercial and investment banks	Analytical research design	insignificant relationships between capital risks, liquidity risks and exchange rate risk and financial performance
4	Siddique, Khan, & Khan (2021)	A Comparative Evaluation of the Effects of Credit Risk Control on the Profitability of	To analyze effect of credit risk management and bank-specific factors on South	Descriptive research design	CAR and ALR have significantly positively related to the FP of the Asian commercial banks.

		Micro-Finance Bank	Asian commercial banks' financial performance		
5	Agyemang (2020)	"Empirical Analysis of the Financial Performance of Listed Banks in Ghana	To investigate the financial performance of listed Banks Ghana during the period of 2015-2018.	Analytical research design	liquidity position of these banks is very alarming and aggravating as most the banks have poor liquidity issues making depositors vulnerable of losing their investments
6					
7	Ramazan Ekinci1*, Gulden Poyraz (2019)	The Effect of Credit Risk on Financial Performance of Deposit Banks in Turkey	To analyze the impact of credit risk on banks performance	Descriptive	negative relationship between credit risk and ROA as well as between credit risk and ROE
8	Koley (2019)	Analysis of Financial Position and Performance of Public and Private Sector Banks in India: A Comparative Study on SBI and HDFC Bank".	To identify financial position and performance of the selected banks	Descriptive Research design	Nabil bank is less efficient in utilization of their assets. The loan ratio of Nabil bank is higher than HDFC bank
9	Qais & Boris (2018)	Financial Performance of Commercial Banks in Afghanistan	To examine the internal factor effect on profitability	Explore Research design	The findings show that the banks' internal factors have significant impact over its profitability
10	Mustafa & Taqi (2017)	A Study on the Financial Performance Evaluation of Punjab National Bank	To examine the profitability position of PNB, to examine the business performance of PNB	Analytical research design	Results showed that the profitability of the bank was strongly and negatively influenced by the deposits and advances.

11	Jaiswal & Jain (2016)	A Comparative Study of Financial Performance of SBI and ICICI Banks in India	To analyze the financial performance of SBI and ICICI banks	Analytical Research design	ICICI bank is performing well in terms of NPA and provision for NPA in comparison of Nabil bank.
12	Shah et al. (2015)	Financial Comparison of Commercial Banks	To Determines the ranking of commercial banks on the base of bank size, return on assets (ROA), and return on equity (ROE), spread ratio, and earnings per share (EPS).	Analytical research design	Based on EPS, first MCB Bank Limited is at the top, Habib Bank Limited is the second, United Bank Limited is the third and last one is Summit Bank Limited.
13	Nandhini and Sivasakthi (2015)	An analysis of selective Indian public sector banks using camel approach	To financial soundness of selective public sector banks under globally accepted CAMEL framework	Descriptive and analytical	signifying that the overall performance of selective public sector banks
14	Islam (2014)	Performance Evaluation of the Banking Sector in Bangladesh: A Comparative Analysis	TO explore that among the entire CAMEL ratio	Explore research design, Bangladesh	DFIs has been found more vulnerable compared to the rest of three categories.
15	Shiv Neupane (2021)	Financial Performance of Nepalese Commercial Banks of Nepal in the Framework of CAMEL	To analyze and compare the capital adequacy of the sample banks	Descriptive research design	There is significant correlation relationship between total deposit and total loan and advances of sample banks

16	Bishnu Prasad Bhattarai (2019)	Effect Of Credit Risk Management On Financial Performance Of Commercial Banks In Nepal	To investigate the effect of credit risk on the financial performance of commercial banks in Nepal	Analytical research design	CAR, NPLR, MQR and CDR significantly influences bank performance.
17	PujaLaxmi Shrestha (2019)	Credit Risk Management and Financial Performance of Commercial Banks in Nepal	To examines the impact of credit risk management on the profitability of Nepalese commercial banks	Analytical research design	indicate a significant positive relationship between non-performing loans and commercial banks' profitability revealing
18	Khim Raj B.C (2019)	Credit Risk Management of Nepalese Commercial Bank	To assess the extent to which the implementation of various credit risk management strategies by the bank has reduced the amount of nonperforming loans	Descriptive research design	MBL has high NPL which decreases the profit high credit risk. Highest CAR of MBL which means MBL leads to less credit exposures
19	Sandip Sharma (2019)	Performance evaluation of commercial bank of Himalayan Bank ltd.	To analyze the financial performance of bank	analytical	The banks performance in satisfactory at increasing trend.
20	Usha Shrestha (2018)	Credit Risk Management and Its Impact on Profitability of Nepalese Commercial Banks	To assesses credit risk management and its impact on profitability of Nepalese commercial banks	Descriptive and analytical research design	capital adequacy ratio has been found a positive impact on the profitability of banks
21	Krishna Acharya (2017)	Financial performance analysis of Nepalese commercial bank.	To Financial performance analysis of commercial bank	Descriptive	Everest banks has better performance.

| 22 | Krishna Sapkota (2016) | Comparative study of financial performance of Himalayan bank and SBI bank | To Comparative study of financial performance of sample bank. | Descriptive and analytical | Himamyan has better performance |
| 23 | Anita Dhakal (2014) | Financial analysis of financial performance | To Analyze the financial performance of bank | Descriptive and analytical | Increasing trend of return and financial performance |

2.3.2 Review of thesis

Neupane (2021) researched was finished as part of CAMEL's Comparative Study on the Financial Performance of Nepalese Commercial Banks. The study's primary goals were to analyze and compare the sample banks' capital sufficiency, look at their asset management, quality, and earnings, and assess their liquidity state using a descriptive research approach. 27 commercial banks in Nepal make up the research's total sample population. Rastriya Banijya Bank Limited, Agriculture Development Bank Limited, and Nabil Bank Limited were selected as samples. Secondary data were gathered for the study from bank annual reports, Rastra Bank Reports, journals, and magazines. Data analysis employs statistical methods, capital adequacy analysis, and financial ratio analysis.

Bhattarai (2019) investigated the effect of credit risk on the financial performance of commercial banks in Nepal. For the investigation, 160 observations from the balance panel data of 10 commercial banks from 2001 to 2016 were employed. The financial performance (ROA) of the commercial banks in Nepal is significantly correlated with the capital adequacy ratio (CAR), non-performing loan ratio (NPLR), and management quality ratio (MQR), according to the regression results. Similarly, the financial performance of Nepal's commercial banks is not significantly impacted by the loan to deposit ratio (CDR) or risk sensitivity (RS).

Shrestha (2019) exmined the impact of credit risk management on the profitability under analytical research design. The study was completed on five-year data about the credit

risks management impact on profitability of bank financial performance of sample banks. The result of study was that indicate a significant positive relationship between non-performing loans and commercial banks' profitability revealing. Which means the profitability of banks is negatively influences by credit risk of bank.

B.C (2019) accessioned the extent to which the implementation of various credit risk management strategies by the bank has reduced the amount of nonperforming loans under descriptive research design of sample bank on the basis of five-year data. The sample banks of the study were found that, MBL has high NPL which decreases the profit high credit risk. Highest CAR of MBL which means MBL leads to less credit exposures. The credit exposure is less of MBL compared to another sample bank.

Manandhar (2019) determined the current position of NPLR, CPLR, CAR, LAR, ROA and ROE across Nepalese private and government banks, investigate the significant mean difference in NPLR, CPLR, CAR, LAR, ROA and ROE across Nepalese private and government banks and examine the relationship between NPLR, CPLR, CAR, LAR, ROA and ROE across Nepalese private and government banks under the Descriptive and analytical approaches are used to show the outcome of the study. Secondary data has been collected from various publications of different commercial banks, NRB and various other sources. Among all, total non-performing loan (TNPL) was observed highest in mean, median and standard deviation among other variables. However, sample Nepalese private and government banks in our study have greater diversification on their TNPL. 2. Among all, loan and advances ratio (LAR) was observed highest in mean, median and standard deviation among other dependent and independent variables. However, sample Nepalese private and government banks in our study have greater diversification on their LAR. 3. The mean difference of non-performing loan ratio was found significant difference across Nepalese private and government banks. 4. The mean difference of cost per loan ratio was found significant difference across Nepalese private and government banks. 5. The mean difference of capital adequacy ratio was found insignificant difference across Nepalese private and government banks.

Sharma (2019) conducted a study on Performance Evaluation of Commercial Banks through CAMEL. The major objectives of the study are; to examine the capital adequacy of selected commercial banks in references of NRB directives, analyze the ratio of loan loss provision to non- performing loan or safety margin., evaluate the management efficiency in regard to bank total revenues, expenses and other established controlling and monitoring mechanism, assess the status, tendency and constancy of earnings. The main results of the study are; Capital Adequacy: The average both Total Capital Adequacy Ratio (TCAR) and Core Capital Adequacy Ratio (CCAR) of SCBNL has highest i.e., 13.77% and 12% and ranked on 1st position and NABIL and NABIL has lowest i.e., -10.82% and 8.75% and ranked on last or 5th position, Asset's quality: The Non-performing loan of SCBNL is lowest i.e., 0.66% and ranked on 1st position and HBL has highest i.e., 28.44% and ranked on 5th or last position, management efficiency: According to Operating expenses ratio SCBNL is at 1st position i.e., 48.97 % and SBI is at 5th position i.e., 68.72%. We can say that SCNBL has better management performance and efficient operation SBI has poor management performance and inefficient operation, earning quality: According to Return on Equity (ROE) and Return on Asset (ROA) SCBNL is ranked at 1st position i.e., 31.50 % and 2.56% and SBI is ranked at 5th position i.e.,18.19 % and 1.23 %. It seems that equity capital and assets of SCBNL is effectively used to generating profit than another bank, liquidity Analysis: The Liquid Assets to Total Deposit ratio and Liquid Assets to Total Assets ratio of NABIL has highest and ranked at 1st position i.e., 17.67 % and 15.73 % and SBI has least than other and ranked at 5th position i.e., 10.26% and 9.22 %. Which shows unnecessary liquid assets of SBI is idle and there is scarcity of liquid assets on NABIL.

Shrestha (2018) assessed credit risk management and its impact on profitability of Nepalese commercial banks Descriptive and analytical research design capital adequacy ratio has been found a positive impact on the profitability of banks non-performing loan ratio and loan and advance to deposit ratio has been found that there is significantly negative impact on the profitability. Thus, this study concludes that the credit risk management is an important predictor for the profitability of the bank. Therefore, the success of the bank in term of profitability depends on its credit risk management.

Acharya (2017) conducted a study on Financial Performance Analysis of Nepalese Commercial Banks. A Comparative Study of Everest Bank Ltd and Nepal Investment Bank Ltd. The objectives of the Study are; to study and compare of financial performance of NABIL and NIBL employ correlation, regression, and trend analysis tools to show the relationship between these two banks in terms of deposit, investment, and profit. As well as to ascertain the growth rates of the two banks in terms of deposit, loan & advances, investment, and profitability. The study's findings indicate that NABIL and NIBL are not equally powerful across all domains. One is better at turning a profit, but the other struggled to stay steady, was less successful in getting deposits out, and focused on making a small number of well-diversified investments. Current ratio found to be in fluctuate trend NIBL is competent to fulfill its present commitment. Consequently, NIBL's liquidity ratio is higher than NABIL, NIBL is successful to collect larger amount of fixed deposit out of its total deposit which is indicated by its higher mean ratio than that of NABIL.

The loan and advances to total deposit ratio and fixed deposit ratio of both banks found to be a satisfactory level and maintain the good consistency in ratio. However, NIBL has a higher mean ratio it shows that NIBL liquidity position with respect to this ratio is more satisfactory than NABIL.

Sapkota (2016) studied entitled Comparative Study of Financial Performance of Himalayan Bank Limited and SBI bank Limited. The basic objective of the study is to examine the financial performance of the selected three commercial banks, to analyze and compared the liquidity, profitability, efficiency and leverage positions of among sample commercial banks, to analyze and compare solvency ratio such as capital adequacy ratio. Examine the position of NPA in the banks. finding of study was cash and bank balance to total deposit ratio indicates that NSBI (9.55%) is more competent in payment deposit and more liquidity may maintained than HBL (7.34%), Comparing two banks, it can be concluded that although the trend of fixed deposit to total deposit of NSBI (58.02%) is not satisfactory than that in HBL (25.80%), Further, the ratio is more consistent in NSBI (14.27%) than HBL (24.48%) comparing the two banks, it can be concluded that HBL is aggressive than NSBI in mobilizing the total deposit in loans and

advance. Further, the variability in the ratio is more consistent in HBL than in NSBI. Greater average ratio indicates successful utilization of deposit.

Shrestha (2015) completed study on NBIL, NIBL, and NICB and a thesis on the Financial Performance of Commercial Banks. Will make an effort to use ratio analysis to examine the financial performance of NBIL, NIBL, and NICB. The study's goals were to ascertain the Nabil, NIB, and NIC banks' liquidity, profitability, leverage, and efficiency of capital adequacy position; to conduct a SWOT analysis of the aforementioned three banks; and to supply the essential banks, particularly in Nabil and NIB. Comments and suggestions for improving the three banks mentioned above. The study's conclusion was that while their profitability was at a good level, their liquidity position particularly their current and quick ratios was weak and fell short of the recommended level. In conclusion, the sample banks' financial results appear to be adequate. In contrast to NIC and NIB, NIC has superior capital adequacy and assets quality ratios, whereas Nabil's profitability, turnover position, capital structure, and other metrics (EPS, P/E ratio, and MVPS to BVPS) are inferior. All things considered, Nabil is superior to NIC and NIB as it is less hazardous than the two banks, attracts investors well, and has capable management. Put differently, the three studied banks' total operational income and financial indicators net working capital, leverage, and capital adequacy position do not significantly differ from one another when it comes to NABIL investing in less hazardous sectors.

2.3 Research gap

As previously discussed, Nepalese commercial banks have encountered challenges in recent years due to relaxed credit standards and inadequate portfolio risk management. The present study aims to address the existing literature gap on this subject by incorporating new data and extending the time series. The objective is to enhance the understanding of the relationship between credit risk management and the profitability of banking performances. The study also seeks to compare its results with previous research findings and investigate any disparities. The primary focus is on assessing the impact of non-performing risky loans on the profitability of sample banks, with a commitment to identifying the causes of any differing results. Numerous studies in the financial sector have explored credit risk in commercial banks, highlighting factors such as equity, assets,

non-performing loans, and management quality. Generally, these studies have indicated an inverse association between non-performing loans and both Return on Assets (ROA) and Return on Equity (ROE). The study on the impact of credit risk management on the financial performance of commercial banks in Nepal aims to either validate or challenge these existing findings, contributing new insights to the ongoing discourse.

CHAPTER -III

RESEARCH METHODOLOGY

Research methodology serves as a systematic framework for resolving research problems, encompassing various sequential steps to be undertaken by a researcher with specific objectives in mind. This methodological approach is pivotal in guiding the analysis process and involves considerations for sources and limitations of the data. The researcher is directed through a series of organized steps, starting from problem identification, literature review, and hypothesis formulation to study design, data collection, analysis, interpretation, and conclusion. A critical aspect of research methodology lies in its role in setting clear objectives, ensuring that the study's goals are well-defined and achievable. It also emphasizes the importance of understanding and acknowledging the sources of data and any associated limitations, promoting transparency in the research process. Research methodology facilitates the use of appropriate financial and statistical tools for data analysis, contributing to the reliability and validity of the findings. Once the analysis is complete, the methodology aids in presenting the results in a systematic manner, organizing data effectively and utilizing visual aids when necessary. In essence, research methodology provides researchers with a structured and comprehensive approach, contributing to the overall credibility and rigor of their studies by ensuring a thoughtful and methodical exploration of the research problem.

3.1 Research Design

The study uses a descriptive and causal research design. The study is supported by secondary data that was gathered from the yearly reports of the sample bank, an economic survey, and a financial report from Nepal Rastra Bank. Secondary data will be the foundation of this study. Just descriptive and causal studies will be conducted. Secondary data is gathered from each bank's annual report, other publications, periodicals, Nepal Rasta Bank, Nepal Stock Exchange, and other relevant magazines. It

includes ten years' worth of data, from 2012/13 to 2021/22. It will merely serve as the study's framework and aid in the examination of facts pertinent to the subject. Financial and statistical methods like profitability ratios will be used to assess the gathered data.

3.2 Population and Sample

In Nepal, there are now 20 from 2080 /3/29 commercial banks in operation. The population of study was 20 commercial banks, out of them 3 banks taken as sample. They were Everest Bank Limited, Himalayan Bank Limited, and Siddhartha Bank Limited. The sample bank from the random sampling techniques. The study's ten-year data spans 2012/13 to 2021/22.

3.3 Nature and Source of data

The study's based on quantitative and secondary sources yearly reports of banks and publically available information from the money authority. The term "secondary data" refers to information that has previously been gathered, used, and made public through publications like annual reports, periodicals, newspapers, magazines, etc. The monetary authority in Nepal is the Nepal Rastra Bank. The website of banks and the money authority is the data collection tool.

3.4 Data Collection Method

The data collection from the secondary sources, published from the relevant organization. The method of data collection were non-probability.

3.5 Methods of Analysis

The statistical techniques of correlation and regression as well as the financial ratio method are employed for data analysis. The statistical methods of correlation and regression are used to analyze the relationship between the risk factor and other research independent variables. The financial ratio tool, on the other hand, gauges the financial standing of the sample bank study under Bassel III.

3.5.1 Statistical Analysis
Mean

The sum of all observation of data the quantity obtained by dividing the sum of all observations of data the number of observations is called the arithmetic means of data. The arithmetic means is often abbreviated as arithmetic means and it is denoted by $\bar{X}$.

$$\bar{X} = \frac{\Sigma X}{n}$$

Standard Deviation

The square of arithmetic mans of the squares of the deviation of the items of a data taken it arithmetic means called the standard deviation or root means square deviation. It is generally denoted by the letter σ.

$$\sigma = \frac{\sqrt{\Sigma D}}{N}$$

$$\sigma = \sqrt{\frac{\Sigma d^2}{N} - \left(\frac{\Sigma d}{N}\right)^2}$$

Correlation coefficient

A statistical tool called correlation is used to assess how closely two or more variables are related. Calculating the correlation coefficient is stated to be a measurement of the linear relationship between the variables. Correlation coefficient values are always between -1 r and 1. Correlation can be described mathematically as:

$$\text{Coefficient (r)} \quad = \quad \frac{N\Sigma xy - \Sigma x\Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2}\,\sqrt{N\Sigma y^2 - (\Sigma y)^2}}$$

Regression Analysis

Basnet (2014) In terms of the original unit of the data, regression analysis is a statistical evaluation of the average relationship between two or more variables. Regression can therefore be defined as the estimation or prediction of the value of a single variable based on the value of another variable. It is a statistical tool used to forecast the value of unknowable variables from the values of known ones. The two variables with the average link are only two, according to the simple regression analysis. While multiple regression covers the use of two or more independent variables to estimate the unknown value of a dependent variable, it evaluates the change per unit. Regression can be described mathematically as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

They are as follows:

$$\text{ROA} = \beta_0 + \beta_1 CAR + \beta_2 NPLR + \beta_3 MQR + \beta_4 CDR\ldots\ldots\ldots\ldots\ldots\ldots.1$$

$$\text{ROE} = \beta_0 + \beta_1 CAR + \beta_2 NPLR + \beta_3 MQR + \beta_4 CDR\ldots\ldots\ldots\ldots\ldots\ldots..2$$

Where;

ROA = Return on Assets

ROE = Return on Equity

CAR = Capital Adequacy Ratio

NPLR = Non-performing Loan

MQR = Management Quality Ratio

CDR = Credit to Deposit Ratio

3.5.2 Financial Tools

The link between two or more sets of financial data gathered from the income statement and balance sheet is quantified using financial ratio analysis tools. It gives details about the advantages and disadvantages of a financial data set in comparison to others. To compare financial statements, there are many different types of financial ratios available. The required financial ratios for the study are:

Return on Assets (ROA): The return on assets which is often called the firms return on total assets, the overall effectiveness of management in generation profit with its available assets. The higher the firms return on assets the better it is doing in operation and vice versa.

$$Return\ on\ Assets = \frac{Net\ Income}{Total\ Assets}$$

Return on Equity (ROE): The return on equity measures the return on the owner's investment in the firm. Higher ratio of return on equity is better for owner. It is calculated as:

$$Return\ on\ Equity = \frac{Net\ Income}{Total\ Equity}$$

Capital Adequacy Ratio (CAR): it takes into account the most important financial risks-foreign exchange, credit and interest rate risks, by assigning risks weighting to the

institutions assets. Risks weighted assets (RWA), Tier 1 capital, Tier 2 capital, will be used to calculate the total capital adequacy ratios.

$$Capital\ Adequacy\ Ratio = \frac{TIER1Capital + TIER2Capital}{RWA}$$

Non-performing Loan (NPLR): The non-performing loan to total loan ratio indicates the relationship between non-performing loan and total loan. It measures the proportion of non-performing loan in total loan and advances. The ratio is used to analyze the assets quality of the bank and determined by using the given model.

$$NPL\ to\ Total\ Loan = \frac{Non - Performing\ Loan}{Total\ Loan\ and\ Advance}$$

Where, non-performing loan is sum of substandard loan, doubtful loan and loss loan. The lower the NPL, the better it is. NPL is lower quality loans of a bank.

Management Quality Ratio (MQR): it measures the proportion of total operating expenses in total operating revenues. A high or increasing ratio of expenses total revenue can indicate that bank may not operating efficiently. This can be, but is not necessarily due to management deficiencies.

$$Total\ operating\ Expenses\ to\ Total\ Operating\ Revenue = \frac{Operating\ Expesnses}{Operating\ Revenue}$$

Where, operating expenses includes interest expenses, staff expenses, exchange loss and other expenses. And total operating revenue is sum of interest income, commission and discount, exchange income another income.

Credit to Deposit Ratio (CDR): The ratio between total credit to customer and deposit in the bank. The ratio shows the credit lending proportion of total loan and amount of total deposit by depositors in bank account. The higher ratio shows the higher credit creation relative to deposit, it shows the relationship between credit and deposit.

$$Credit\ to\ Deposit\ Ratio = \frac{Total\ Credit\ Creation}{Total\ Deposit}$$

3.6 Research Framework and Definition of Variable

Independent Variable   **Dependent Variable**
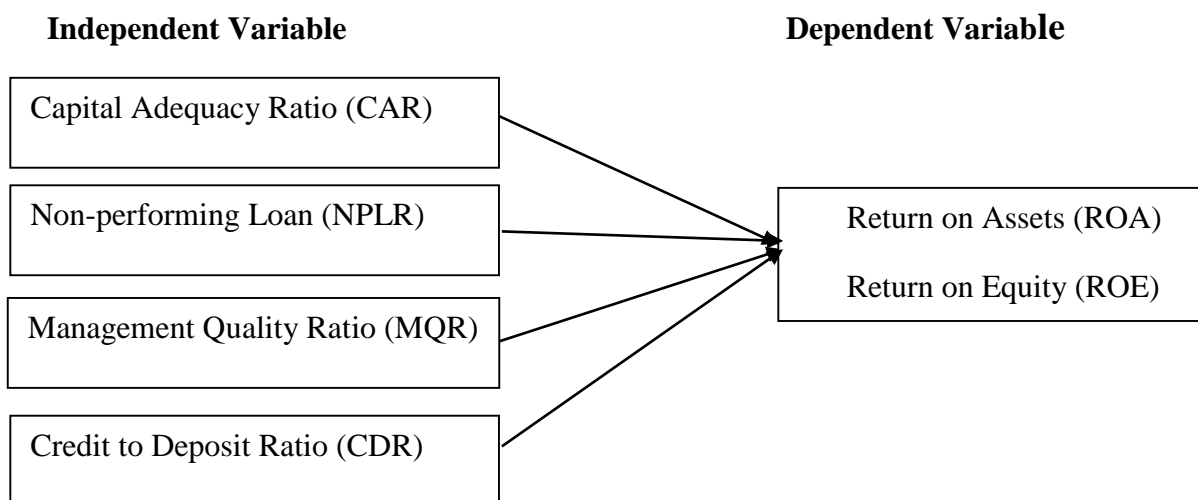
Figure: 1 Conceptual Frame work of study

(*Source:* Bishnu Prasad Bhattarai (2019)

Capital Adequacy Ratio (CAR): Thapa (2069) Banks have to make decisions about the amount of capital they need to hold for these reasons. First, bank capital helps prevent bank failure, a situation in which the bank cannot satisfy its obligations to pay its depositors and other creditors and so goes out of business. Second, the third, a minimum amount of bank capital is required by regulatory authorities.

Non-performing Loan Ratio (NPLR): Thapa (2069) nonperforming loan is the loans emanated from the deterioration in the quality of the loan portfolios. Unified directives (2075) have instructed banks and financial institutions to classify their loans into two categories: performing loans and non-preforming loans. The classification is based on duration of delay in debt servicing. Non-preforming loan ratio is proportional relationship between non-performing loan and total loans and advances.

Management Quality ratio (MQR): Raiyani, (2010) Management soundness is a qualitative variable that expresses the control of board of directors over the resources of the bank to protect shareholder's interest. It is measured by the ratio of total operating income to total assets. Quality management ensures an organization, product or services constant. It includes quality of planning, quality of assurance, quality control and quality

improvement. The operating expenses of an organization and operating revenue are main component, which influences the quality of management in an organization. Higher the ration indicates the high risk in organization.

Credit to Deposit Ratio (CDR): Bhattarai (2019) credit to deposit ratio shows the total lending amount to total deposit in bank. The deposit amount is lending to customer, which is main income source of income of banks. The high lend bring the risk for the financial institutions. The credit creation is main earning source of financial institution, the banks should consider the risk factor at the time of credit creation.

Return on Assets (ROA): Bhattarai & Ghimire (2063) the return on assets that means proportional relationship between net profit after tax and total assets of banks. Where net profit getting deduction all expenditure within organization. The higher return always indicates the soundness of banks and financial institution. It also indicates low risk for institution.

Return on Equity (ROE): Bhattarai & Ghimire (2063) the return on equity is proportional relationship between net profit after tax and equity of bank. The net profit getting deduction all expenditure with organization. Equity return is another main indicator of risk factor in banking and financial institutions, where high return on equity indicates low risk of institution compared to low return institution.

CHAPTER IV

RESULT AND DISCUSSION

4.1 Results

The findings and outcomes of data analysis gleaned from the field secondary data employing instruments like annual report, web side of relevant institutions. The analysis and justification of data results is done using descriptive statistical methods.. The data were interpreted using descriptive statistical methods like means, standard deviation, and coefficient of variation, correlation and regression analysis. In order to examine the data, MS-Excel is also employed. The respondent is used as fact and data

4.1.1 Descriptive financial analysis
While descriptive statistics is the use and analysis of those statistics, descriptive statistics is a summary statistic that quantitatively describes or summarizes features from a collection of data.

Table 1 *Return on Assets /ROA of sample banks (In percent)*

Year	Everest	Himalaya	Siddhartha
2012/13	2.25	1.54	1.43
2013/14	1.85	1.3	1.74
2014/15	1.61	1.34	1.51
2015/16	1.72	1.94	1.69
2016/17	1.83	2.19	1.53
2017/18	1.97	1.67	1.59
2018/19	1.94	2.21	1.49
2019/20	1.42	1.79	1.26
2020/21	0.89	1.68	1.25
2021/22	1.13	1.09	1.1
ROA	**1.66**	**1.68**	**1.46**
S.D	**0.41**	**0.37**	**0.20**
C.V	**0.25**	**0.22**	**0.14**

(*Source*: Appendix 1)

Table 1 displays the return of a commercial bank on its assets. The return is based on the commercial bank's total assets and net profit after taxes. Everest Bank Limited, Himalaya Bank Limited, Siddhartha Bank Limited, are three of the five institutions used as examples. The total return on assets divided by the number of years is used to calculate each bank's average return. Everest Bank's average return on assets is 1.66, with a

standard deviation of 0.41; in comparison, Himalaya Bank Limited's average return on assets is 1.68, with a standard deviation of 0.37; and Siddhartha Bank Limited's average return on assets is 1.46, with a standard deviation of 0.20. Similarly the coefficient of variation 0.25, 0.22 and 0.14 of these sample banks, the less is shown by the ratio of return on assets. A riskier comparison between a high return on investment and a low return on investment. The return on assets can assist banks manage their risk. In comparison to banks with lower return on assets, those with sufficient return on assets are better able to manage credit risk.

Table 2 *Return on Equity/ ROE (In Percent)*

Year	Everest	Himalaya	Siddhartha
2012/13	26.63	32.56	41.59
2013/14	24.75	28.78	54.46
2014/15	20.58	38	50.82
2015/16	18.31	33	28.26
2016/17	16.03	21.58	19.62
2017/18	16	14.17	1.47
2018/19	17.32	18.34	1.47
2019/20	13.45	15.4	13.38
2020/21	8.56	14.89	13.99
2021/22	10.87	10.75	13.82
ROE	17.25	22.747	23.888
S.D	5.68	9.57	19.22
C.V	0.33	0.42	0.80

(*Source*: Appendix 1)

Table 2 displays the commercial bank's return on equity, which was computed using its equity and net earnings after taxes. Everest Bank Limited, Himalaya Bank Limited, and Siddhartha Bank Limited are three of the five institutions used as examples. Total return on equity is divided by the number of years to determine each bank's average return. Everest Bank's average return on assets is 17.25, with a standard deviation of 5.68; Himalaya Bank Limited's average return is 22.747, with a standard deviation of 9.57; and Siddhartha Bank Limited's average return is 23.89, with a standard deviation of 19.22. Siddhartha Bank Limited has the highest return on equity, with a highest standard deviation of 19.22, which is high. The aforesaid bank's equity outcome validates the danger of high return. Coefficient of variation 0.33, 0.42 and 0.80 respectively within study period.

Table 3 *Capital Adequacy Ratio of Commercial Banks (In Percent)*

Year	Everest	Himalaya	Siddhartha
2012/13	11.59	11.55	11.8
2013/14	11.31	11.23	11.39
2014/15	13.33	11.14	11.1
2015/16	12.66	10.84	11.25
2016/17	14.54	12.15	12.74
2017/18	14.2	12.46	12.12
2018/19	13.74	12.6	12.7
2019/20	13.38	14.89	13.17
2020/21	12.48	13.89	13.36
2021/22	11.89	11.75	13
CAR	12.91	12.25	12.26
S.D	1.11	1.28	0.84
C.V	0.09	0.10	0.07

(*Source*: Appendix 1)

Table 3 shows capital adequacy ratio of commercial banks is displayed in Table 3 and is based on the capital and risk-weighted exposure of the commercial bank. Everest Bank Limited, Himalaya Bank Limited, and Siddhartha Bank Limited are three of the five institutions used as examples. The capital adequacy ratio of each bank is determined by dividing the capita by the number of years. Everest Bank's average capital adequacy ratio on assets is 12.91, with a standard deviation of 1.11; Himalaya Bank Limited's average return is 12.25, with a standard deviation of 1.28; and Siddhartha Bank Limited's average return is 12.26, with a standard deviation of 0.84. Everest Bank Limited has the greatest adequacy ratio and the highest standard deviation (1.11), the coefficient of variation on average capital adequacy ratio as 0.09, 0.10 and 0.07 respectively.

Table 4 *Non-performing Loan Ratio of Commercial Banks (In Percent)*

Year	Everest	Himalaya	Siddhartha
2012/13	0.62	2.89	2.39
2013/14	0.97	1.96	2.75
2014/15	0.66	3.22	1.8
2015/16	0.38	1.23	1.47
2016/17	0.25	0.85	1.3
2017/18	0.2	1.4	1.09
2018/19	0.16	1.12	0.75
2019/20	0.22	1.01	1.38
2020/21	0.12	0.48	1
2021/22	0.12	1.59	1.07
NPL	0.37	1.575	1.5
S.D	0.29	0.88	0.64
C.V	0.78	0.56	0.43

(*Source*: Appendix 1)

Table 4 non-performing loan ratio is derived by dividing the commercial bank's total loan by the non-performing loans as shown in Table 4 for commercial banks. Everest Bank Limited, Himalaya Bank Limited, and Siddhartha Bank Limited are three of the five institutions used as examples. Based on the non-performing loan ratio by the number of years, each bank's non-performing loan ratio is computed. Everest Bank's average non-performing loan to asset ratio is 0.37, with a standard deviation of 0.29; Himalaya Bank Limited's average return is 1.575, with a standard deviation of 0.88; and Siddhartha Bank Limited's average return is 1.5, with a standard deviation of 0.64, where highest nonperforming loan of Himalayan bank lowest of Everest bank but the coefficient of variation 0.78, 0.56 and 0.43 respectively.

Table 5 *Credit Deposit Ratio of Commercial Banks (In percent)*

Year	Everest	Himalaya	Siddhartha
2012/13	76.57	77.36	83.55
2013/14	78.01	71.82	79.02
2014/15	66.63	75.37	83.04
2015/16	73.52	79.12	87.02
2016/17	84.05	85.1	88.4
2017/18	81.86	88.31	86.08
2018/19	87.01	87.37	89.65
2019/20	83.52	82.31	89.04
2020/21	85.3	89.87	90.6
2021/22	90.77	92.14	96.08
CDR	80.72	82.88	87.25
S.D	7.12	6.77	4.71
C.V	0.09	0.08	0.05

(*Source*: Appendix 1)

Table 5 displays the commercial bank's credit deposit ratio relative to its total deposit. This ratio is determined by dividing the commercial bank's total deposit by the credit creation rate. Everest Bank Limited, Himalaya Bank Limited, and Siddhartha Bank Limited are three of the five institutions used as examples. Based on the non-performing loan ratio by the number of years, each bank's non-performing loan ratio is computed. Everest Bank's average credit deposit ratio on deposits is 80.72, with a standard deviation of 7.12; Himalaya Bank Limited's average return is 82.88, with a standard deviation of 6.77; while Siddhartha Bank Limited's average return is 87.25, with a standard deviation of 4.71. Siddhartha Bank Limited's highest credit deposit ratio is 87.88, with a 4.71 standard deviation. This indicates that on average, the Siddhartha bank is superior to other commercial banks, while coefficient of variation 0.09, 0.08 and 0.05 respectively.

Table 6 *Management Quality Ratio of Commercial Banks (in times)*

Year	Everest	Himalaya	Siddhartha
2012/13	0.29	0.44	0.38
2013/14	0.3	0.45	0.37
2014/15	0.34	0.48	0.39
2015/16	0.31	0.36	0.31
2016/17	0.33	0.37	0.35
2017/18	0.36	0.36	0.34
2018/19	0.35	0.14	0.41
2019/20	0.36	0.39	0.44
2020/21	0.44	0.37	0.39
2021/22	0.39	0.36	0.4
MQR	0.35	0.37	0.38
S.D	0.04	0.09	0.04
C.V	0.13	0.25	0.10

(*Source*: Appendix 1)

Table 6 displays the management ratio of a commercial bank as a percentage of total operating revenue. The management quality ratio is determined by dividing the gross operating revenue of the commercial bank by operating expenses. Everest Bank Limited, Himalaya Bank Limited, and Siddhartha Bank Limited are three of the five institutions used as examples. Based on the management quality ratio divided by the number of years, each bank's management quality ratio is computed. Everest Bank's average management quality ratio for deposits is 035, with a standard deviation of 0.04; Himalaya Bank Limited's average return is 0.37, with a standard deviation of 0.0.09; and Siddhartha Bank Limited's average return is 0.38, with a standard deviation of 0.04, where highest ratio is 0.38 of Siddhartha bank limited with S.D 0.04 lowest ratio of Everest that means Everest bank is more efficient.

Table 7 *Descriptive Statistics of ROA, ROE, CAR, NPL, CDR and MQR of Banks*

Particular	N	Minimum	Maximum	Mean	Std. Deviation
ROA	30	1.18	1.87	1.57	0.24
ROE	30	11.96	31.00	19.81	8.00
CAR	30	11.52	13.48	12.41	0.68
NPL	30	0.65	2.06	1.27	0.55
CDR	30	77.13	93.50	83.98	5.34
MQR	30	0.34	0.41	0.38	0.03

(*Source*: Appendix 1)

Table 7 displays the various average ratios for the years 2013 through 2022. The sample commercial bank's average return on assets is 1.57 percent, with an average return standard deviation of 0.24; its average return on equity is 19.81 percent, with an average return standard deviation of 8; its average capital adequacy ratio is 12.41 percent, with an average return standard deviation of 0.68; and its average return on non-performing loans is 1.27 percent, with an average return standard deviation of 0.55. The average credit generation and deposit ratio is 83.98 with a standard deviation of 5.34, while the average ratio of management quality is 0.38 with a standard deviation of 0.03. These total average ratios demonstrate the state of the sample commercial banks' ROA, ROE, CAR, NPLR, MQR, and CDR.

4.1.2 Correlation analysis

We can determine the direction and size of the association between two or more variables using the correlation coefficient. This coefficient is calculated by multiplying the standard deviations of the two variables by their covariance. This correlation coefficient's magnitude reveals the linear link between the two variables. Zero correlation means there is no relationship. The correlation value rises towards +1 as the strength of the association between the variables increases, and rises to -1 as the relationship between the variables is weaker. Since +1 denotes an entirely positive link between variables and -1, an entirely negative association, the simple correlation coefficient has been employed as a relationship measuring method in this study.

Table 8 *Correlation ROA with CAR, NPLR, MQR and CDR*

		ROA	CAR	NPL	CDR
ROA	Pearson Correlation	1			
	Sig. (2-tailed)				
CAR	Pearson Correlation	-0.229	1		
	Sig. (2-tailed)	0.524			
NPL	Pearson Correlation	-0.037	-.770[**]	1	
	Sig. (2-tailed)	0.919	0.009		
CDR	Pearson Correlation	-0.336	.640[*]	-.823[**]	1
	Sig. (2-tailed)	0.343	0.046	0.003	
MQR	Pearson Correlation	-0.621	0.070	0.339	-0.164
	Sig. (2-tailed)	0.055	0.849	0.337	0.650

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Appendix

Table 8 shows correlation of variables return on assets, capital adequacy ratio, non-performing assets, and credit deposit ration. The correlation of return on with return on equity is 0.201 insignificant, with capital adequacy ratio is 0.229 negative low degree, with non-performing assets is 0.037 negative insignificant, and with credit deposit ratio low degree negative correlation that is 0.336 and management quality ratio is moderate level negative insignificant. The correlation of capital adequacy ratio with non-performing loan is high degree 0.77 significant at 0.01. With credit deposit ratio is moderate level significant at 0.05 that is 064, with management quality ratio is very low insignificant. The correlation of non-performing loan with management quality ratio is insignificant that is low degree correlation 0.339. The correlation of credit with management quality ratio is very low degree correlation negative insignificant.

Table 9 *Correlation ROE with CAR, NPLR, MQR and CDR*

		ROE	CAR	NPL	CDR
ROE	Pearson Correlation	1			
	Sig. (2-tailed)				

CAR	Pearson Correlation	$-.801^{**}$	1		
	Sig. (2-tailed)	0.005			
NPL	Pearson Correlation	$.933^{**}$	$-.770^{**}$	1	
	Sig. (2-tailed)	0.000	0.009		
CDR	Pearson Correlation	$-.909^{**}$	$.640^{*}$	$-.823^{**}$	1
	Sig. (2-tailed)	0.000	0.046	0.003	
MQR	Pearson Correlation	0.092	0.070	0.339	-0.164
	Sig. (2-tailed)	0.801	0.849	0.337	0.650

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

(*Source*: Appendix)

Table 9 shows the correlation of variables return on equity, capital adequacy ratio, non-performing assets, and credit deposit ration. Correlation of return on equity with capital adequacy 0.801 high correlation at 0.801 significant at 0.05 level, with non-performing assets is very high 0.933 significant at 0.01, with credit deposit ratio very high negative significant at 0.01 and with management quality ratio is very low 0.092. The correlation of capital adequacy ratio with non-performing loan is high degree 0.77 significant at 0.01. With credit deposit ratio is moderate level significant at 0.05 that is 064, with management quality ratio is very low insignificant. The correlation of non-performing loan with management quality ratio is insignificant that is low degree correlation 0.339. The correlation of credit with management quality ratio is very low degree correlation negative insignificant.

4.1.3 Regression Analysis

The link between a number of independent variables and a single dependent variable is examined using regression analysis. Researchers can use this analysis technique to show how much of the variability in the dependent variable is explained by various independent factors. When the emphasis is on the link between a dependent variable and one or more independent variables, it encompasses a number of approaches for modeling and evaluating multiple variables. Regression analysis specifically enables one to comprehend how any one independent variable influences the dependent variable's usual value while the other independent variables remain constant.

4.1.3.1 Regression lie analysis of CAR, NPL, CDR and MQR

The regression line of CAR, NPL, CDR and MQR on ROA, where independent variable influences the change volume of dependent variables which is shown as following tables.

Table 10 *Regression analysis of CAR, NPL, CDR and MQR on ROA*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.838[a]	.703	.465	.17339

a. Predictors: (Constant), MQR, CAR, CDR, NPL

Table 10 shows the R square value 70.30 percent of dependent variables affected by the independent variables.

Table 11 *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.356	4	.089	2.956	.133[b]
	Residual	.150	5	.030		
	Total	.506	9			

a. Dependent Variable: ROA

b. Predictors: (Constant), MQR, CAR, CDR, NPL

Table 11 shows the fitness of the regression line of CAR, NPL, CDR and MQR on ROA. The calculated value of F is 2.956 is insignificant at 0.05 level where significant value greater than 0.05 that is 0.133 that represent insignificant.

Table 12 *Coefficient*

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.275	2.620		3.159	.025
	CAR	-.081	.162	-.231	-.501	.638
	NPL	-.365	.282	-.845	-1.294	.252
	CDR	-.043	.020	-.961	-2.170	.082
	MQR	-4.384	2.954	-.476	-1.484	.198

a. Dependent Variable: ROA

Table 12 shows the coefficient of independent variables where independent variables CAR, NPL, CDR and MQR are 0.81, 0.365, 0.043 and 4.384, where significant value are 0.638, 0.252, 0.82 and 0.198.

4.1.3.2 Regression line analysis of CAR, NPL, CDR and MQR

The regression line analyze of CAR, NPL, CDR and MQR on ROE, where impact of independent variables analyzed to compute and estimate the dependent variable. The regression line analyzed as following table.

Table 13 *Regression analysis of CAR, NPL, CDR and MQR on ROE*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.984[a]	.968	.943	1.90778

a. Predictors: (Constant), MQR, CAR, CDR, NPL

Table 13 show the R-square value is 0.968 that means 96.80 percent of return on equity affected by the value of independent variables.

Table 14 *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	558.267	4	139.567	38.346	.001[b]
	Residual	18.198	5	3.640		
	Total	576.465	9			

a. Dependent Variable: ROE

b. Predictors: (Constant), MQR, CAR, CDR, NPL

Table 14 shows the fitness of regression line of independent variable on dependent variables, the calculate value of F is 38.346 is significant at 0.05 level where significant value is 0.001.

Table 15 *Coefficient*

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	82.426	28.827		2.859	.035
	CAR	-.512	1.783	-.043	-.287	.785
	NPL	9.665	3.106	.662	3.111	.027
	CDR	-.550	.216	-.367	-2.543	.052
	MQR	-59.158	32.507	-.190	-1.820	.128

a. Dependent Variable: ROE

Table 15 shows the coefficient of independent variable are significant at 0.

05 level or not. Where in tale coefficient of CAR, NPL, CDR and MQR 0.512, 9.665, 0.55 and 59.518 negative except NPL coefficient where CDR and NPL are significant at 0.05 level.

4.2 Discussion

The bank wise return on assets ROA as Everest banks has return on assets is 1.66 percent, return on assets of Himalayan bank was 1.68 and return on assets of Siddhartha bank limited is 1.46 percent. There is highest return on assets earn by the Himalayan bank limited the because of investment in profitable sector, efficient management, appropriate contribute in increases return. Second highest return of Everest bank limited that is 1.66 percent gain from the economic opportunities, management efficient, and third position of Siddhartha bank. The return on equity of sample bank earn highest return on equity earn by the Siddhartha bank limited is 23.89 percent, second position of Himalayan bank limited that is 22.75 percent and third position hold by the Everest bank limited that is 17.25 percent. This situation because of profit volume of bank and equity capital when higher profit volume lower the amount of equity capital then return may be high, if there

is same equity but volume profit is differ affect the return on equity. The capital adequacy of banks maintained, highest capital adequacy ratio of Everest bank i.e. 12.91 second highest proportion maintained by the Siddhartha bank limited third portion hold by the Himalayan bank which means higher proportion helps to minimize risk in bank however it also reduces the return on lending by lending volume. The non –performing loan ratio of banks highest NPL of Himalayan bank limited that is 1.575, second highest of Siddhartha bank limited and lowest portion of Everest bank. Behind of this situation various managerial activities, macroeconomic variables and other various non-controllable forces affect the negatively non-performing loan ratio of bank. So, the company consider the investment opportunities, probability of risk at the time of investment. The credit deposit ratio of banks highest ratio of Siddhartha bank limited 87.25 percent that means lending by Siddhartha bank out of total deposit is 87.25 percent which is profitable as well as risk. Second portion of Himalayan bank limited that is 82.88 percent lend by bank out of total deposit and lowest portion of Everest bank limited that is 80.72 percent lend out of deposit. The highest risk taken by Siddhartha bank limited and lowest of Everest bank. The management quality ratio of sample banks the management quality ratio of Siddhartha bank is 0.38 which is highest that means management quality of bank inefficient to other sample bank, second highest percentage is Himalayan bank and third rank of Everest bank limited. These ratio indicates portion of operating expenses and operating income of banks. Lower the ratio preferable at same level of operation income. It may be change due the increase operating income or reducing the operating cost matching with Shrestha (2015), Sapkota (2016) ratios are differ each other among banks, Manandhar (2019) the mean difference of cost per loan ratio was found significant difference across Nepalese private and government banks.

Correlation of return on assets with other variables return on equity, capital adequacy ratio, non-performing loan, credit deposit ratio and management ratio is insignificant at varies level. Similarly, the correlation of return on equity other independent variables significant with capital adequacy ratio, non-performing loan but positive high and very high level, credit and deposit ratio is negative very high level significant. Similarly, the correlation of management quality ratio is very low degree insignificant marching with Khalid, et al. (2021) there is a positive relationship between the banks' financial

performance and capital adequacy ratio, but the correlation is not significant. Furthermore, the correlation between the banks' financial performance and non-performing loans is significant.

Regression line of impact of CAR, NPL, CDR and MQR on ROA is insignificant at 0.05 contradict with Bhattarai (2019) regression results revealed that capital adequacy ratio (CAR), non-performing loan ratio (NPLR), and management quality ratio (MQR) have significant relationship with the financial performance (ROA) of the commercial banks in Nepal. However the 70.30 percent volume of return on assets is explained by the independent variables. And coefficient of all independent variables coefficient are also insignificant. But the regression analysis of CAR, NPL, CDR and MQR on ROE is significant the volume of return on equity 98.40 percent explained by the independent variables however the CAR and MQR coefficient insignificant and NPL and CDR coefficient are significant, match Siddique et al. (2021) The findings showed that whereas CAR and ALR had a considerably favorable relationship with the FP of the Asian commercial banks, NPLs, CER, and LR had a significantly negative relationship with FP (ROA and ROE).

CHAPTER V

SUMMARY AND CONCLUSION

This chapter briefly explains the summary of the study i.e. financial performance compared to credit and credit risk of sample banks tries to fetch out conclusion and attempts offer implications by study.

5.1 Summary

Financial analysis is one of the key indicators of financial performance since it shows how well management is performing. Financial analysis is essential to the long-term viability of corporate organizations. An investor will always place their money where the potential for profit is greatest. The financial statement is a good tool to determine if a company is successful or not. The inefficient creation and use of capital plagues virtually all developing nations, and Nepal is no different. This study's primary goal is to assess the financial performance of representative banks. The study's precise goals include an analysis of the sample banks' current credit and credit risk situations, a look at how CAR, NPLR, MQR, and CDR relate to ROA and ROE, and an analysis of the impact compare the effects of CAR, NPLR, MQR, and CDR on bank performance of CAR, NPLR, MQR, and CDR on financial performance of banks.

The study has employed a descriptive and informal research design to accomplish its unique goal. Comparative analysis of financial performance is conducted using a descriptive research methodology, whereas relationship analysis is conducted using a casual research style. The study solely relied on secondary data, which were gathered from the annual reports of five sample banks: Everest Bank Limited, Himalayan Bank Limited, and Siddhartha Bank Limited. The ten years from 2013 to 2022 are covered by the study. The CAR ratio, non-performing loan ratio, management quality ratio, and credit deposit ratio are used for risk analysis. Correlation and regression are used to analyze the effects of the CAR, NPLR, MQR, and CD ratio on ROA and ROE.

According to the study's descriptive analysis, Siddhartha Banks' return on assets is consistent when compared to the returns of the other sample banks, placing them in second place. The return on assets for international banks is consistent, but. Siddhartha

Banks has a different return on equity than the other banks in the sample, and is followed by Himalayan Bank. Other banks, however, have consistent return on equity. The non-performing loan ratio of commercial banks is not in a catastrophic situation because they have been able to reduce it over the years, but initially every bank had a high NPL ratio. The capital adequacy ratio of sample banks has been maintained in compliance with BASEL requirements. The sample banks' credit deposit ratio reveals the a small difference according to banks and occasionally have lending ratios above 90%, on average, sample commercial banks' lending is below 90%. The management quality ratio of the sample banks reveals that Siddhartha Banks' level of quality is higher than that of the other sample banks by a factor of more than other. Correlation of return on assets with other variables return on equity, capital adequacy ratio, non-performing loan, credit deposit ratio and management ratio is insignificant at varies level. Similarly, the correlation of return on equity other independent variables significant with capital adequacy ratio, non-performing loan but positive high and very high level, credit and deposit ratio is negative very high level significant. Similarly, the correlation of management quality ratio is very low degree insignificant. The regression line of CAR, NPL, CDR and MQR on ROA is insignificant, however the CAR, NPL, CDR and MQR on ROE is significant at 0.05.

5.2 Conclusion

The Himalayan Bank has the greatest return on assets due to investments in valuable industries, effective management, and judicious use of resource increase from economic possibilities, effective management, and Everest Bank Limited's second-highest return place Siddhartha Bank in third place. Siddhartha Bank Limited has the best return on equity of the sample bank with a return. Himalayan Bank Limited is in second place, while Everest Bank is in third place to be precise. When a bank's profit volume is larger and its equity capital is smaller, the return may be high. Conversely, if there is the same amount of equity but a different profit volume, the return on equity will be different. The Everest Bank, which has the highest capital adequacy ratio, Siddhartha Bank, which has the second-highest percentage, and Himalayan Bank, which has the third-highest percentage, all maintain adequate capital levels. While higher capital ratios help banks reduce risk, they also lower the return on lending by volume. Himalayan Bank Limited

has the highest percentage of non-performing loans among banks, followed by Siddhartha Bank Limited and Everest Bank. So the management should consider various variables about the management process.

Return on assets has little to no correlation with other factors like return on equity, capital adequacy ratio, non-performing loan, credit deposit ratio, and management ratio. Similar to this, there is a negative extremely high level significant link between return on equity and other independent variables such as the capital adequacy ratio, non-performing loan level, and credit and deposit ratio. The association between management quality ratio and correlation is also negligibly significant.

At 0.05, the regression line showing the effect of CAR, NPL, CDR, and MQR on ROA is not significant. However, the independent factors account for 70.30 percent of the return on assets. Additionally, the coefficients of all independent variables are all negligible. However, the volume of return on equity is 98.40 percent explained by the independent variables, but the CAR and MQR coefficients are negligible and the NPL and CDR coefficients are significant in the regression analysis of CAR, NPL, CDR, and MQR on ROE.

5.3 Implication

The credit risk managed by the financial institution through the various financial tool and techniques. There is various tool like capital adequacy ratio, non-performing loan ratio, management quality ratio, and credit deposit ratio are main risk management factor in banking sector. So, the implication of this study can be explained as:

- The risk is undesirable factor of financial institution influences the activities of banks. So, the study helpful in industrial analysis of risk on the basis of capital adequacy ratio, non-performing loan ratio, management quality ratio, and credit creation ration on deposit with return on assets and return on equity.

- The study contributes to improve the financial soundness on the basis of analyzed data in study.

- The study useful for long term financial planning, strategy and selection of financial tools to make sound performance of banks institution.

- The study useful for comparative analysis among the competitive firm and whole industry and make the future strategy, policy and plan of business.

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APPENDIX I

ROA				NPL			
Year	Everest	Himalaya	Siddhartha	Year	Everest	Himalaya	Siddhartha
2012/13	2.25	1.54	1.43	2012/13	0.62	2.89	2.39
2013/14	1.85	1.3	1.74	2013/14	0.97	1.96	2.75
2014/15	1.61	1.34	1.51	2014/15	0.66	3.22	1.8
2015/16	1.72	1.94	1.69	2015/16	0.38	1.23	1.47
2016/17	1.83	2.19	1.53	2016/17	0.25	0.85	1.3
2017/18	1.97	1.67	1.59	2017/18	0.2	1.4	1.09
2018/19	1.94	2.21	1.49	2018/19	0.16	1.12	0.75
2019/20	1.42	1.79	1.26	2019/20	0.22	1.01	1.38
2020/21	0.89	1.68	1.25	2020/21	0.12	0.48	1
2021/22	1.13	1.09	1.1	2021/22	0.12	1.59	1.07
AVERAGE	1.66	1.68	1.46	**AVERAGE**	0.37	1.575	1.5
S.D	0.41	0.37	0.20	**S.D**	0.29	0.88	0.64
C.V	0.25	0.22	0.14	**C.V**	0.78	0.56	0.43

ROE				CDR			
Year	Everest	Himalaya	Siddhartha	Year	Everest	Himalaya	Siddhartha
2012/13	26.63	32.56	41.59	2012/13	76.57	77.36	83.55
2013/14	24.75	28.78	54.46	2013/14	78.01	71.82	79.02
2014/15	20.58	38	50.82	2014/15	66.63	75.37	83.04
2015/16	18.31	33	28.26	2015/16	73.52	79.12	87.02
2016/17	16.03	21.58	19.62	2016/17	84.05	85.1	88.4
2017/18	16	14.17	1.47	2017/18	81.86	88.31	86.08
2018/19	17.32	18.34	1.47	2018/19	87.01	87.37	89.65
2019/20	13.45	15.4	13.38	2019/20	83.52	82.31	89.04
2020/21	8.56	14.89	13.99	2020/21	85.3	89.87	90.6
2021/22	10.87	10.75	13.82	2021/22	90.77	92.14	96.08
AVERAGE	17.25	22.747	23.888	**AVERAGE**	80.72	82.88	87.25
S.D	5.68	9.57	19.22	**S.D**	7.12	6.77	4.71
C.V	0.33	0.42	0.80	**C.V**	0.09	0.08	0.05

CAR				MQR			
Year	Everest	Himalaya	Siddhartha	Year	Everest	Himalaya	Siddhartha
2012/13	11.59	11.55	11.8	2012/13	0.29	0.44	0.38
2013/14	11.31	11.23	11.39	2013/14	0.3	0.45	0.37
2014/15	13.33	11.14	11.1	2014/15	0.34	0.48	0.39
2015/16	12.66	10.84	11.25	2015/16	0.31	0.36	0.31
2016/17	14.54	12.15	12.74	2016/17	0.33	0.37	0.35
2017/18	14.2	12.46	12.12	2017/18	0.36	0.36	0.34
2018/19	13.74	12.6	12.7	2018/19	0.35	0.14	0.41
2019/20	13.38	14.89	13.17	2019/20	0.36	0.39	0.44
2020/21	12.48	13.89	13.36	2020/21	0.44	0.37	0.39
2021/22	11.89	11.75	13	2021/22	0.39	0.36	0.4
AVERAGE	12.91	12.25	12.26	**AVERAGE**	0.35	0.37	0.38
S.D	1.11	1.28	0.84	**S.D**	0.04	0.09	0.04
C.V	0.09	0.10	0.07	**C.V**	0.13	0.25	0.10

APPENDIX II

Year	ROA	ROE	CAR	NPL	CDR	MQR
2013	1.59	28.7	11.52	2.04	79.15	0.38
2014	1.63	31	11.58	2.06	77.78	0.39
2015	1.46	30.6	12.07	1.98	77.13	0.41
2016	1.73	23.89	11.78	1.24	80.28	0.34
2017	1.83	19.14	12.7	1	84.21	0.35
2018	1.72	11.96	12.56	0.87	85.24	0.4
2019	1.87	13.9	12.84	0.65	88.91	0.34
2020	1.38	13.78	13.48	1.09	85.78	0.39
2021	1.26	12.74	13.23	0.75	87.84	0.4
2022	1.18	12.34	12.33	1.02	93.5	0.38
AVERAGE	1.57	19.81	12.41	1.27	83.98	0.38
S.D	0.24	8.00	0.68	0.55	5.34	0.03
C.V	0.15	0.40	0.05	0.43	0.06	0.07