PORTFOLIO MANAGEMENT OF COMMERCIAL BANK IN NEPAL

A Dissertation Submitted to the Office of the Dean, Faculty of Management in Partial Fulfillment of the Requirements for the Master of Business Studies (M.B.S)

BY:

Sanima Shrestha

Shanker Dev Campus

Class Roll No: 2876/17

College Roll No: 55/073

Registration No: 7-2-530-84-2012

Kathmandu, Nepal

June, 2024

CERTIFICATE OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitle **PORTFOLIO MANAGEMENT OF COMMERCIAL BANK IN NEPAL.** The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it 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 the dissertation.

.....

Sanima Shrestha
Shanker Dev Campus
Class Roll No: 2876/17
Registration No: 7-2-530-84-2012

REPORT OF RESEARCH COMMITTEE

This is to certify that the dissertation entitled **PORTFOLIO MANAGEMENT OF COMMERCIAL BANK IN NEPAL** submitted by Sanima Shrestha to the Faculty of Management, Tribhuvan University in partial fulfillment for the award of the degree of MBS is original research work carried out by him under my supervision. As far my knowledge, the contents of this in full or in parts have not been submitted to any other institutions or university for the award of any degree or for any commercial purpose.

Kamal Prakash Adhikari

Dissertation Supervisor

Signature……

Asso. Prof. Dr. Sajeeb Kumar Shrestha

Research Head

Signature……

Dissertation Proposal Defended Date:

…….

Dissertation Submitted Date:

…….

Dissertation Viva Voce Date:

…….

APPROVAL SHEET

We, the undersigned, have examined the thesis entitled **PORTFOLIO MANAGEMENT OF COMMERCIAL BANK IN NEPAL** presented by Sanima Shrestha 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.

.....
Kamal Prakash Adhikari
Dissertation Supervisor

.....
Internal Examiner

.....
Internal Expert

.....
External Expert

.....
Asso. Prof. Dr. Sajeeb Kumar Shrestha
Chairperson Research Committee

.....
Asso. Prof. Dr. Krishna Prasad Acharya
Campus Chief

ACKNOWLEDGEMENTS

First of all, I would like to thank Tribhuvan University for giving chance to prepare the thesis for a partial requirement to the fulfillment of Master Degree of Business Studies program held under Tribhuvan University. After many months of hard work and sincere effort from my side, this research has been conducted. I would like to acknowledge the following notable personalities who have contributed their valuable efforts in different ways in creation of this research.

I would express my profound gratitude to my thesis supervisor Kamal Prakash Adhikari of Shanker Dev Campus for his valuable guidance and kind support to me all the way through this thesis his co-operation in the revision of this thesis has precisely helped me to groom and bring it in this form. I also owe deep gratitude to all reputed authors whose writings have provided me the necessary guidance and invaluable materials for the enrichment of my research papers in all possible ways. My special appreciation goes to my colleague and to all my family members, teachers and friends for their continuous encouragement and help to complete this work directly or indirectly.

Perfection is anything can hardly be thought of knowing the universal fact "Human is Error", I Have taken utmost care to avoid errors, but I know they are inescapable, so I shall be obliged if they are forgiven.

Sanima Shrestha

Shanker Dev Campus

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

ABBREVIATIONS

BS	Bank Size
EBL	Everest Bank Limited
IOGS	Investment on Government Securities
IP	Investment Portfolio
LA	Loan and Advance
LAATDR	Loan and Advance to Total Deposit Ratio
MP	Markowitz Portfolio
NRB	Nepal Rastra Bank,
NSBL	Nepal SBI Bank Limited
PM	Portfolio Management
PPM	Project portfolio management
ROA	Return on Assets
ROE	Return on Equity
S&D	Share & Debenture
Sanima	Sanima Bank Limited
SBL	Siddhartha Bank Limited
SCBNL	Standard Chartered Bank Nepal Limited
TAMT	Technology Acceptance Model
TO &E	Technology, Organization and Environment
TVTC	Technical and Vocational Training Corporation

ABSTRACT

This research delves into the portfolio management strategies adopted by commercial banks in Nepal, with a specific focus on five prominent institutions: Sanima Bank Limited, Everest Bank Limited, Standard Chartered Bank Nepal Limited, Nepal SBI Bank Limited, and Siddhartha Bank Limited. The primary objectives revolve around assessing the existing state of portfolio management, exploring its correlation with financial performance, and evaluating how investment decisions impact overall bank performance. Employing a descriptive and analytical research framework, data primarily sourced from various publications, governmental bodies, and libraries formed the basis of analysis. Utilizing analytical methodologies like correlation and regression analyses, the study aimed to uncover significant relationships among key variables. The findings suggest a positive correlation between non-performing loans and return on assets, implying that an increase in non-performing loans corresponds to higher returns and bank size. However, the study observed a weak negative relationship between return on equity and return on assets, alongside a notable negative correlation between the loan-to-deposit ratio and return on assets. Through linear regression analysis, the study accounted for the variance in the dependent variable, with identified predictors significantly influencing the model's outcomes. Acknowledging limitations such as a relatively small sample size and dependence on secondary data, this study nonetheless offers valuable insights into the portfolio management practices of Nepalese commercial banks. Notably, it underscores the significance of factors like non-performing loans and loan-to-deposit ratios in shaping profitability metrics. Moving forward, future research endeavors should aim to mitigate these limitations while broadening the scope to encompass a more comprehensive array of variables for a nuanced understanding of portfolio management practices within Nepal's banking sector.

Keywords: *Return on Assets, Return on Equity, Government Securities, Share and Debenture, Loan and Advance, Bank Size*

CHAPTER I
INTRODUCTION

1.1 Background of the Study

A bank serves as a financial institution handling money transaction, including receiving deposits from customers, honoring withdrawal requests, processing checks, and lending or investing surplus funds until they're needed. Over time, various types of banks have emerged, such as industrial, commercial, agriculture, joint venture, cooperative, and development banks. This diversification is attributed to population growth, shifts in industries and trade, increased competition, and evolving societal ideologies, as noted by Bhandari (2003).

Banks typically play a pivotal role in financing government projects through purchasing bonds and notes. They also serve as crucial channels for government economic policies aimed at stabilizing the economy. Furthermore, banks are primary sources of short-term working capital for businesses and increasingly offer long-term loans for capital investments. In everyday transactions, individuals and businesses frequently rely on banking services like checks, credit/debit cards, and electronic transfers, turning to banks for financial advice and planning, as highlighted by Pokharel (2009).

Investors aim for positive returns on their investments, albeit not without accepting some level of risk. To manage risk and optimize returns, portfolio diversification is essential. A portfolio represents a collection of securities tailored to specific investment objectives, with investors seeking to minimize deviations from expected returns. Diversification mitigates risk by spreading investments across various assets, reducing the volatility of returns, as emphasized by Francis (2003).

Portfolio management involves the efficient administration of investments in financial assets like stocks and bonds. It can be undertaken by professionals, individuals, or corporate entities, with portfolios reflecting preferences and decisions regarding risk and return. However, the accuracy of decision-making processes is not guaranteed in all instances, as highlighted by Jaiswal (2012).

Portfolio analysis entails assessing future risks and returns associated with holding different securities. The expected return of a portfolio is a weighted average of the

expected returns of individual securities. Commercial banks, in particular, aim to maximize wealth by investing funds in profitable avenues while adhering to principles of prudence and stability. They diversify investments across sectors to mitigate risks, adhering to the adage of not placing all eggs in one basket.

Periodic evaluation of portfolio performance involves assessing both returns earned and risks experienced by investors. In this context, this report endeavors to analyze the risk-return trade-offs across portfolios of five distinct banks Sanima, EBL, SCBNL, SBI, and SBL.

1.2 Statement of the Problem

Commercial banks in Nepal heavily rely on the regulations set forth by the central bank, Nepal Rastra Bank, which significantly shapes their asset portfolio composition. This reliance poses a major challenge to banks' investment planning. Additionally, the complex political and economic landscape, coupled with inadequate infrastructure and the decline of numerous industries both private and government-owned further complicates portfolio management for banks. These factors collectively hinder investment opportunities for banks.

The emergence of numerous finance companies, cooperative societies, and development banks in a short span following the adoption of economic liberalization policies has intensified competition for commercial banks. This heightened competition threatens the banking system as a whole, compelling managers to enhance productivity. Moreover, commercial banks' investment decisions are influenced by various factors, including credit policies, discount rates, interest rates, and lending policies.

Nepal is currently experiencing continuous economic recession, resulting in lower investment volumes, sluggish gross domestic product growth, and escalating trade deficits. Consequently, only a few competitive entrepreneurs can sustain themselves in the market, while others are forced to withdraw. Commercial banks, too, are directly impacted by this economic downturn, facing challenges in extending loans to profitable sectors. In such circumstances, commercial banks often resort to investing in government securities like T-bills and T-bonds, which offer lower returns compared to credit.

Commercial banks are integral to the country's economic growth, tasked with generating profits to ensure their survival and fulfill their responsibilities. Their primary activities involve mobilizing resources, incurring costs, and deploying resources profitably to generate income. However, failure to generate sufficient returns on deployed resources not only drains the bank's resources but also affects the country's economy. The global financial crisis of 2008 has had repercussions on the country's economy, affecting the competitiveness of banks and increasing risks for depositors.

The financial sector, traditionally linked with trade and industry, has suffered adverse effects, with investment in productive sectors declining due to various challenges. Banks have been diversifying their services globally and expanding into near-banking functions. Technological advancements have facilitated worldwide networking in banking. Given the current economic scenario in Nepal, banks must explore alternative avenues for profitability.

Commercial banks manage a portfolio investment comprising a diversified collection of financial assets, including stocks, bonds, government securities such as Treasury bills and bonds, corporate bonds, and various other investment instruments. The composition of this portfolio is influenced by factors such as regulatory requirements, economic conditions, and the bank's risk appetite. By diversifying their investment portfolio, banks aim to optimize returns while managing risks effectively.

The relationship between portfolio management and profitability in commercial banks is crucial. Effective portfolio management practices can significantly impact a bank's profitability. By strategically allocating resources across different asset classes and sectors, banks can optimize returns while minimizing risks. However, poor portfolio management decisions can lead to losses and negatively affect a bank's profitability. Therefore, there exists a direct correlation between the efficiency of portfolio management and the profitability of commercial banks.

Investment portfolio choices play a vital role in determining the performance of commercial banks. The allocation of funds to various assets and sectors affects factors such as return on assets (ROA), return on equity (ROE), and net interest margin (NIM). For instance, investing in high-yield assets may lead to higher returns

but could also entail greater risk. On the other hand, investing in low-risk assets may offer stability but could result in lower returns. Additionally, the composition of the investment portfolio influences the bank's ability to withstand economic downturns and external shocks. Therefore, prudent investment portfolio choices are essential for enhancing the overall performance and sustainability of commercial banks.

i. What types of portfolio investments are typically managed by commercial banks?
ii. How does portfolio management affect the profitability of commercial banks?
iii. How does it investment portfolio choices impact the performance of commercial banks?

1.3 Objectives of the Study

The primary aim of this research is to analyze the portfolio investment management practices adopted by commercial banks in Nepal, including SANIMA, EBL, SCBNL, SBI, and SBL. The study concentrates on the investment choices made by banks regarding their portfolios. The specific objectives of this study are outlined as follows:

i. To assess the existing situation of portfolio management of Nepalese commercial banks.
ii. To analyzed the relationship between portfolio management of profitability and the financial performance of commercial banks.
iii. To examine the effect of the investment portfolio choices in the performance of commercial banks.

1.4 Rationale of the Study

With the advent of globalization, the market functions as a unified entity, extending investment opportunities beyond traditional boundaries. Portfolio management, a complex endeavor, has gained prominence in this scenario. Various stakeholders are influenced directly or indirectly by business activities, which are intertwined with economic policies shaping both state economies and firms' financial conditions. Investors seek higher returns through value maximization, leading to a shift from solely government sector shares to diversified investments, particularly with the emergence of joint venture banks due to economic liberalization. This evolution necessitates in-depth analysis of risk, return, and market sensitivity, thus driving the

development of portfolio management strategies. Such studies hold significance across economic domains, enabling organizations to assess financial indicators, performance trends, and identify areas for improvement. They also contribute to the broader banking industry by offering tools for comparative analysis and insights into sector stability. Moreover, they serve as valuable resources for researchers interested in further exploration of this field.

1.5 Limitations of the Study

The study encounters several limitations stemming from the complexity of the subject matter, challenges in obtaining accurate measurements, potential biases in the measurement process, difficulties in making precise predictions, and vague objectives. The scope of the research is constrained by the following factors:

i. The investigation focuses on only five out of the twenty commercial banks in Nepal.
ii. Consequently, the findings and conclusions cannot be broadly applied to all commercial banks operating in the country.
iii. The study relies solely on secondary data.
iv. Data analysis spans fiscal years from 2013/014 to 2022/023.
v. The research exclusively examines portfolio management in investment decision-making.

CHAPTER II
REVIEW OF LITERATURE

The literature review holds significant importance in the planning phase of a study. Its primary objective is to examine existing works related to the research problem and identify gaps in the field. Researchers typically consult a variety of sources such as books, reports, journals, and research studies published by different institutions, as well as unpublished dissertations from master's level students, to conduct a comprehensive review.

2.1 Theoretical Review

The literature review involves examining past research studies and relevant materials to enhance existing knowledge and conduct an in-depth exploration of the subject matter. It commences with identifying a suitable topic and extends across volumes of similar or related subjects, contributing new dimensions to the ongoing study. Integral to the research process, it is a mandatory step aimed at establishing the conceptual framework and reviewing literature pertinent to portfolio management. Various resources including books, journals, and articles addressing this topic are thoroughly explored. The review draws upon available literature in the research field, with efforts focused on acquiring knowledge and information from libraries and seeking feedback to enrich the study's information base.

Markowitz Portfolio Selection Model

Portfolio investment serves as an effective means of diversifying risk, yet selecting the optimal portfolio poses a challenge. A portfolio comprises a collection of securities, presenting investors with the dilemma of choosing the most suitable portfolio from a range of options. In 1952, Harry M. Markowitz introduced a seminal paper that laid the foundation for portfolio theory in investment. Markowitz's framework starts with the assumption that an investor has a fixed sum of money to invest for a defined holding period. At the end of this period, the investor sells the initially purchased securities. Central to Markowitz's model is the analysis of risk-return trade-offs, wherein decisions hinge on the notion of efficient portfolios. An efficient portfolio is one that offers maximum expected return for a given level of risk or minimum risk for a specified level of return.

Portfolio Theory Assumptions

Harry M. Markowitz introduced the portfolio selection model, which relies on certain assumptions regarding investor behavior. Investors view each investment option as having a probability distribution of expected returns over the same holding period. They aim to maximize their one-period expected utility and possess a utility curve illustrating the diminishing marginal utility of wealth. Risk assessment is based on the variability of expected returns, and investors make decisions based solely on expected return and variance of returns. Given a certain level of risk, investors prioritize higher returns over lower ones. Similarly, for a given expected return, investors prefer less risk to more risk.

The Efficient Set Theorem

An investor has the flexibility to create an infinite number of portfolios for investment, but it's unnecessary to evaluate each one individually. Instead, the investor can focus on selecting an optimal portfolio from a feasible set, known as the efficient portfolio. This portfolio offers maximum expected return for varying levels of risk and minimum risk for varying levels of expected return. The efficient set, which comprises such portfolios, can be derived from the feasible set representing all possible portfolios formed from a group of N securities. Jensen's Portfolio Performance Measure, developed by Dr. Michael C. Jensen, involves modifying the characteristic regression line to serve as a one-parameter investment performance measure. In Jensen's model, the key random variables are risk premiums denoted as rpi,t, representing the risk premium for asset I in period t, where rI,t is the one-period rate of return from asset I in period t, and Rt is the observed risk-less rate in period t.

Selection of Optimum Portfolio

Given the efficient frontier and the risk return indifference curves, the optimal portfolios are found set point of tangency between the efficient frontier and a utility indifference curve. This point represents the highest level of utility the investor can reach. To select an optimal portfolio an investor should plot his or her indifference curves on the efficient set and then proceed to choose the portfolio on the indifference curve that is farthest northwest .This portfolio will corresponding to the point at which an indifference curve is just tangent to the efficient set. Upon

reflection, the efficient set theorem is quite rational .The efficient theorem stating that; the investor need to be concern only with portfolios that lie on the northwest boundary of the feasible set, is a logical consequence.

2.1.1 Conceptual Review

A. Portfolio Management

Portfolio Management involves the strategic selection of a mix of securities to achieve optimal returns for a given level of risk or to minimize risk for a desired level of return. Its primary objective is to evaluate individual assets and construct efficient portfolios. A portfolio comprises various investment securities, and portfolio theory focuses on identifying the most advantageous portfolios, aiming for either the highest possible return or the lowest possible risk for a specified rate of return.

It is the art of managing a pool of funds to not only maintain but also enhance its value over time, while ensuring a satisfactory return commensurate with the assumed level of risk. Fixed income investments are among the safest options for generating returns in an investment portfolio, typically in the form of bonds issued by corporations or governments, or dividends from corporate stocks. Factors influencing fixed income investments include the creditworthiness or default risk of the issuer and the yield earned by the bondholder. Portfolio analysis aims to construct a portfolio that maximizes returns at the desired level of risk determined by the investor. In essence, a portfolio represents a collection of investment securities (Weston & Brigham, 1992).

Portfolio management entails effectively managing a fund pool to not only maintain its initial value but also enhance it over time, while ensuring a satisfactory return in line with the level of risk taken. This involves following a logical sequence of steps in planning, implementing, and monitoring decisions. The fundamental challenge in portfolio management lies in defining an investment objective or goal and determining the optimal approach to achieve it using available securities. Portfolio theory focuses on selecting portfolios that offer the highest return possible for a given level of risk or the lowest risk possible for a specified rate of return (Weston & Copeland, 2003).

B. Investment Portfolio

A portfolio typically refers to a combination of assets or a collection of securities held by an investor or institution. Portfolio analysis involves assessing future risk and return, which is calculated as a weighted average of the expected returns of individual securities. Portfolio theory is concerned with selecting the optimal portfolio, which offers the highest possible return for a given level of risk or the lowest risk for a specified rate of return, primarily developed for financial assets. Thus, investing from the selected optimal portfolio, which provides the highest return with minimal risk, constitutes the actual investment portfolio. Diversification, where funds are spread across multiple assets, is a common practice among investors, and the combination of these assets is termed a portfolio (Weston & Brigham, 1992).

Investors who entrust someone else to manage their portfolio have the right to inquire about its performance. This information can be utilized to adjust constraints, investment objectives, or allocation of funds to the manager. Evaluating performance allows clients to effectively communicate their preferences to the investment manager, potentially influencing future portfolio management. Similarly, investment managers can identify areas of strength or weakness by evaluating their own performance.

C. Investment Alternatives

A diverse array of investment options is accessible to individual investors within the market. These options can be categorized into financial asset alternatives and real asset alternatives. Financial asset alternatives include common stocks, preferred stocks, bonds, convertible securities, warrants, options, rights, and futures. On the other hand, real asset alternatives encompass investments such as real estate, precious metals, and collectibles. Given the multitude of investment opportunities, each investor aims to enhance their gains by investing in various securities based on their preferences and perceptions (Cheney & Moses, 1995).

D. Portfolio Analysis and Diversification

Diversification serves as a crucial strategy for mitigating investment risk by incorporating multiple asset alternatives and assets from each category within a portfolio. This approach is instrumental in creating an efficient investment by

reducing the variability of returns around the expected return. According to Weston & Copeland (2023), diversification can significantly decrease risk without necessarily compromising the expected rate of return.

Investment decisions are typically made with the aim of achieving an expected rate of return, and diversification plays a pivotal role in this process by minimizing the variability of returns. Francis (2022) emphasizes the importance of diversification in controlling portfolio risk, highlighting its role in limiting exposure to the risk associated with individual securities.

The principle of diversification is encapsulated in the adage don't put all your eggs in one basket, indicating the need to spread investments across various instruments and industries. While diversification does not completely eliminate risk, it is widely acknowledged among investment professionals as a crucial step towards long-term financial goals and risk reduction.

By spreading investments across different financial instruments and industries, diversification aims to mitigate unsystematic risk, for which investors are not typically compensated. Instead, investors are rewarded for bearing market risk, also known as systematic risk. Diversification at the security or industry level helps protect against volatility and uncertainty in returns. By diversifying across companies and industries, investors can mitigate the impact of adverse events affecting a particular company's performance.

2.2 Empirical Study

Ahlemann (2024) conducted a study on the development of project portfolio management (PPM) capabilities within organizations, aiming to understand the factors influencing this process. Despite the recognized benefits of PPM in enhancing competitiveness and aligning with organizational strategy, many organizations face challenges in building PPM capabilities effectively. The academic community lacks a comprehensive understanding of the conditions necessary for successful PPM capability development. It was conducted a multiple-case study involving 50 interviewees to develop a theoretical model of the PPM capability-building process. The resulting model is grounded in the concept of organizational sense-making and identifies key factors contributing to the prolonged duration of PPM capability development. These factors include the impact of

structural changes, the strategic use of external resources, the significance of executive support and legitimization, occurrences of setbacks, and the importance of internalization and habituation. Furthermore, the study offers insights into organizational capability-building processes more broadly.

Bieske et al. (2024) discussed the challenges and success factors associated with pharmaceutical portfolio management, with a particular focus on cognitive biases in decision-making and strategies to mitigate them. Effective portfolio management is critical for fostering innovation and ensuring sustained revenue in pharmaceutical companies. The article provides a comprehensive overview of trends, challenges, and approaches in pharmaceutical portfolio management, highlighting the increasing reliance on external innovation and the growing complexity and competitiveness of portfolios. Portfolio managers encounter cognitive biases in decision-making processes, such as confirmation bias, champion bias, and misaligned incentives. To address these biases, practitioners implement strategies such as seeking expert input, promoting team diversity, and incentivizing truth-seeking behaviors. The article emphasizes the importance of high-quality data, structured review processes, and comprehensive measures to mitigate biases in decision-making for achieving optimal portfolio management outcomes.

Guo and Zhao (2024) investigated the volatility spillovers between oil and coal prices in China and their implications for energy portfolio management. Given coal and oil's prominence in China's energy consumption, understanding the dynamics of their price volatility is crucial for constructing effective energy portfolios. The study utilized daily data from May 2, 2018, to January 23, 2020, focusing on China's crude oil futures market as a new sample for analyzing volatility contagion. Four different multivariate GARCH models were compared to analyze the volatility spillover effect between oil and coal prices. The study found evidence of a long-run co-integration relationship between China's crude oil and coal prices. In the short run, crude oil futures prices led coal prices, and the volatility spillover effect from crude oil to coal was stronger than the reverse. Among the multivariate GARCH models examined, the DCC-GARCH model was found to best fit the data. The study also determined optimal portfolio weights and hedge ratios, indicating that crude oil plays a significant role in minimizing portfolio risk in energy markets. These findings have implications for energy producers, users, and trading enterprises,

providing valuable insights to inform decision-making processes in energy portfolio management.

Punyaleadtip (2024) explored the application of the Black-Litterman portfolio management model, which enhances the Markowitz portfolio selection model by incorporating investor views. This model allows investors to contribute their insights into future expected returns based on their knowledge and experiences. While integrating investor views into portfolio optimization can be labor-intensive, recent advancements in finance have leveraged machine learning techniques to streamline this process. The authors introduced a novel approach utilizing a combination of the long short-term memory model and support vector regression to derive investor views for input into the Black-Litterman model. This method was tested in both emerging (SET Index of the Thai equity market) and developed (Dow Jones Index of the US equity market) markets. Experimental results consistently showed that portfolios constructed using this approach outperformed buy-and-hold portfolios in both markets. This highlights the effectiveness of incorporating machine learning techniques to estimate expected returns and integrate investor views into portfolio management processes.

Watt (2024) conducted a study on project portfolio management, specifically focusing on strategies for navigating crises and achieving long-term success. The paper aims to review recent management advancements worldwide and extract practical insights from contemporary research and case studies. The briefing is authored by an independent writer who offers impartial commentary and contextualizes the articles. It emphasizes the importance of organizations evaluating their performance, assessing available resources, and developing a flexible yet sustainable project portfolio. By implementing these measures, firms can effectively navigate severe crises like the COVID-19 pandemic.

Zhou (2024) conducted a study on an end-to-end direct reinforcement learning approach for multi-factor-based portfolio management. The paper introduces an online portfolio decision model within the framework of direct reinforcement learning, seamlessly integrating the multi-factor model and mean-variance (MV) portfolio optimization. Unlike classical methods that separate estimation and portfolio optimization into two steps unifies these processes into a single performance-oriented online decision-making process. This integration is achieved

by tuning the parameters of a neural network directly with respect to the reward function, which is designed as a combination of prediction error and realized MV utility. The neural network is utilized to estimate future returns and generate the factor loading matrix, facilitating the computation of inputs for the MV portfolio optimization model. The resulting portfolio's utility is then determined. The network parameters are optimized based on the updated reward using gradient methods. This study also develops an online updating scheme for computing the gradient in back propagation, providing explicit formulas for MV portfolio derivatives through the portfolio optimization layer. The proposed method is evaluated using real market data against several benchmark portfolios in out-of-sample tests. The experiments demonstrate that Zhou's approach not only outperforms these benchmarks across various performance metrics but also offers transparency to factor analysis, making it favorable for practitioners.

Aghajani (2023) conducted a study on portfolio management literature with a focus on sustainability mindset, assessment, and integration. Sustainability integration within project portfolio management is essential for shaping strategic, organizational, and project-oriented contexts. Through a structured literature review spanning from 2000 to 2021, the authors developed an integrative framework that provides a comprehensive view of three key research themes: sustainability mindset, sustainability assessment, and sustainability integration within project portfolio processes. The study highlights significant progress made at the strategic and portfolio levels in establishing a sustainability mindset, including defining sustainability values and principles, as well as developing frameworks and tools for sustainability assessment and project portfolio selection. However, there are still areas that require further research, such as integrating sustainability into project portfolio processes, enhancing sustainability reporting practices, and fostering organizational learning for portfolio improvement.

Alshahrani (2023) conducted a study on the adoption of an e-portfolio management system within the Technical and Vocational Training Corporation (TVTC) in Saudi Arabia. Despite the significance of the Electronic Portfolio Management System (EPMS), its widespread adoption among institutions has been limited due to resistance from end-users. Given the importance of EPMS adoption within TVTC organizations, the study aimed to develop an effective framework highlighting

factors influencing adoption and their subsequent impact on employee performance. The study categorized these factors into three dimensions: technological, organizational, and environmental, based on their level of interaction. Utilizing the Technology Acceptance Model (TAM), De Lone and Mc Lean's IS model, and the Technology, Organization, and Environment (TOE) model, the study proposed a robust framework. A quantitative approach was employed, with an online questionnaire distributed to 375 respondents within TVTC institutions. Data analysis was conducted using AMOS-SEM 3 statistical software. The findings revealed that technological, organizational, and environmental factors significantly and positively influenced EPMS adoption. Moreover, there was a substantial relationship between EPMS adoption and employee performance (including academicians and managerial staff). The study identified various factors contributing to EPMS adoption, such as perceived usefulness, ease of use, information and system quality, financial and top management support, training, and environmental factors like cloud computing ability and government role. These factors collectively accounted for 43% of the variance in EPMS adoption and explained 39% of the variance in employees' performance. The study contributes theoretically by addressing a gap in the literature and providing validation for existing models like TAM, De Lone and Mc Lean's IS model, and TOE. It also offers practical insights for policymakers and decision-makers, facilitating the adoption of EPMS with reduced time and effort.

Cheng (2023) investigated probabilistic portfolio management for future stock markets, acknowledging the historical challenge of portfolio management in investment ventures of various scales. The fundamental aim of portfolio management is to optimize investments by maximizing returns while minimizing risks. Conversely, time series prediction has gained prominence for forecasting stock price trends in forthcoming periods. Recent research has explored the amalgamation of these two approaches: forecasting future stock prices and applying portfolio management techniques to the forecasted time series. This emerging research avenue aims to enhance understanding of future market behaviors by predicting stock movements and subsequently implementing portfolio management strategies. However, the uncertainty inherent in future prediction has raised concerns about the reliability of these methodologies and the extent to which their results can be trusted. Consequently, probabilistic approaches have emerged to address this uncertainty,

integrating it into future forecasting and portfolio management. Cheng's review paper delves into various time-series prediction methods for stock market data and provides a classification and assessment of portfolio management approaches. It then focuses on the Monte Carlo sampling method, a prevalent technique for probabilistic analysis of stock market data. The study applies probabilistic portfolio management to future Shanghai Stock Exchange data through a case study, evaluating the method's applicability to real-world scenarios. The findings of this research can serve as a benchmark for analyzing other stock market datasets.

Agrawal and Khizrai (2022) delved into portfolio management, highlighting the intricate nature of investment in securities such as debentures, shares, and bonds, which offer both benefits and risks. Successful investment requires a blend of scientific and rational knowledge to navigate these risks effectively. Investors must balance analytical reasoning with emotional outlooks when making investment decisions. Diversification is a common strategy among investors, as it involves spreading investments across multiple securities rather than concentrating them in a single security. This collection of securities, known as a portfolio, is designed to minimize risk while maximizing returns. Portfolio management emerges as the art and science of crating and supervising a selection of investments that align with the long-term financial objectives and risk tolerance of clients or companies. Through strategic selection and oversight, portfolio management aims to optimize investment performance while mitigating potential risks.

Kock et al. (2022) examined the impact of project portfolio management information systems (PPMIS) on organizational performance, emphasizing the significance of process maturity. With companies increasingly adopting specialized software to support their project portfolio management processes, the market for IT solutions in this domain is expanding. While PPMIS hold the promise of enhancing management processes and portfolio performance, empirical evidence regarding their actual benefits and the conditions conducive to their effectiveness remains scarce. Drawing on a sample of 181 project portfolios, this study provides novel insights by demonstrating that the application of PPMIS is generally associated with improved quality in portfolio management processes and project portfolio success. Notably, the study reveals that these positive effects are contingent upon the level of formalization in single project management, project portfolio management, and risk

management practices. Interestingly, the benefits derived from PPMIS application are independent of portfolio complexity, including factors such as size, project interdependency, and dynamics.

Roberts and Edwards (2022) investigated portfolio management as a novel avenue in public sector strategic management research and practice. Despite its widespread usage in large government agencies and nonprofits, portfolio management remains underexplored in public administration scholarship. Portfolio management tools offer insights into prioritizing investments by elucidating the relationship between risk and outcomes among groups of projects. The article delves into historical and theoretical reasons contributing to the neglect of portfolio management in public administration, subsequently proposing its integration into a classic strategic management framework to inform organizational decisions in the public sector. While portfolio management concepts originated in the private sector, their application in the public sector involves balancing risk against public value or mission outcomes, rather than purely financial outcomes. By incorporating risk into investment decisions, portfolio management serves as a tool for integrating risk into mission-oriented initiatives. This approach holds potential for enhancing intermediate-level implementation tools and developing theories of public value. The paper concludes by outlining hypotheses for future research endeavors in this domain.

Muller and Martinsuo (2018) explored portfolio control and its impact on portfolio management performance across various contexts. The study aimed to understand the nature of project portfolio control techniques and their relationship with portfolio management performance, considering how this association is influenced by situational factors such as internal and external dynamics, industry characteristics, governance structures, and geographic location. A global survey comprising 242 responses was conducted, from which 136 high-performing responses were selected for quantitative analysis to identify best practices. Three key portfolio control factors were identified: portfolio selection, portfolio reporting, and decision-making style. Additionally, two measures for portfolio management performance were delineated: the attainment of desired portfolio outcomes and the achievement of project and program objectives. The findings suggested that different portfolio control mechanisms are linked to distinct performance measures. To account for contextual

variability, a contingency model was developed, incorporating moderating effects by contextual variables. This model provides insights into how portfolio control practices can be tailored to specific organizational contexts to enhance portfolio management performance.

Mantha and Rao (2015) elucidated on Portfolio Management, which is utilized to curate a portfolio of new product development projects with the primary objectives of maximizing profitability or value, ensuring balance, and supporting the enterprise's strategy. The responsibility of Portfolio Management typically rests with the senior management team of an organization or business unit, often referred to as the Product Committee, which convenes regularly to oversee the product pipeline and make decisions regarding the product portfolio. This group often coincides with the one conducting stage-gate reviews within the organization. The process of Portfolio Management begins with the formulation of a product strategy, encompassing aspects such as target markets, customer segments, product offerings, strategic approach, and competitive positioning. Subsequently, the available budget or resources are assessed to ensure alignment and balance within the portfolio. Each project undergoes evaluation based on criteria such as profitability, investment requirements, risks, and other relevant factors. The weighting of these criteria varies among companies, with organizations striving to strike a balance between conflicting goals such as risk versus profitability, innovation versus enhancements, and long-term strategic fit versus short-term gains. Various techniques support the Portfolio Management process, including heuristic models, scoring techniques, and visual or mapping methodologies. Earlier techniques primarily focused on optimizing project profitability using heuristic or mathematical models but often overlooked portfolio balance and strategic alignment. In contrast, scoring techniques assign weights and scores to criteria, considering investment requirements, profitability, risk, and strategic alignment. However, a drawback of this approach may be an excessive emphasis on financial metrics and a tendency to overlook the optimization of project mix.

Martinsuo (2013) delved into the practical implementation of project portfolio management (PPM) within organizations, highlighting the challenges arising from sub-optimization and project dynamics despite the existence of normative guidelines and best practices in the field. The focus of the study was to explore PPM within

real-world contexts and understand its operationalization beyond a purely rational decision-making process. The study conducted a review of recent empirical research literature on PPM, aiming to underscore the limitations of viewing portfolio management solely as a rational decision process. Instead, it advocated for a broader perspective that acknowledges the influence of organizational context, uncertainties, and complexities in business environments. In addition to rational decision-making, the study proposed alternative viewpoints such as negotiation, bargaining, and structural reconfiguration as essential aspects of PPM in practice. By recognizing these alternative perspectives, the study aimed to provide new insights into the challenges faced in day-to-day PPM operations and suggest avenues for addressing them effectively. It emphasized the importance of adapting PPM approaches to suit the specific context of each organization, thereby enhancing the likelihood of success in managing project portfolios.

Summary of Empirical review

Author & Date	Article Topic	Objectives	Variables		Methodology	Findings
			Dep.	Indep.		
Kock, Schulz, Kopmann & Gemünden (2022).	Project portfolio management information systems' positive influence on performance – the importance of process maturity.	To improve the quality of the management process and eventually portfolio performance.	In investment a person has to think on the basis of both analytical and emotional outlook. It is difficult to find someone who invest their total savings in only one security rather they want to invest in combination of securities.	When portfolio is created it reduces the risk and maximises the returns	Using a sample of 181 project portfolios, this study shows for the first time that PPMIS application is overall positively associated with the quality of portfolio management processes and project portfolio success.	Moderation analyses further reveal that these effects only materialize when formalization of single project management, project portfolio management, and risk management are sufficiently high. Surprisingly, the benefits of PPMIS application do not depend on portfolio complexity (size, project interdependency, dynamics).
Bieske, Zinner, Dahlhausen & Trends (2024).	Challenges and success factors in pharmaceutical portfolio management: Cognitive biases in decision-making and their	To examine the Challenges and success factors in pharmaceutical portfolio managemen	This article holistically reviews trends, challenges, and approache	Portfolio managers strongly rely on external innovation and face	High-quality data, structured review processes, and comprehensive mitigating measures against biases are used.	Portfolio management practitioners most commonly face confirmation bias, champion bias, or misaligned incentives, which they seek to mitigate through expert input, team diversity, and rewarding truth-seeking.

	mitigating measures.	t: Cognitive biases in decision-making and their mitigating measures.	s to pharmaceutical portfolio management and focuses, in particular, on cognitive biases in portfolio decision-making	increasing competitive pressure and portfolio complexity		Ultimately, highest-quality portfolio management decision-making could be enabled by three factors: high-quality data, structured review processes, and comprehensive mitigating measures against biases in decision-making.
Roberts & Edwards (2022	Portfolio management: A new direction in public sector strategic management research and practice.	This article explores historical and theoretical reasons for the neglect of portfolio management	then proposes using portfolio management to update a classic strategic management framework	Portfolio management is a tool to incorporate risk to mission in investment decisions.	Using portfolio management to update a classic strategic management framework to guide organizational choices in public administration.	Portfolio management is a tool to incorporate risk to mission in investment decisions. It holds promise for adding an intermediate-level implementation tool to develop theories of public value. The paper concludes with hypotheses for future investigation.
Guo & Zhao (2024).	Volatility spillovers between oil and coal prices and its implications for energy portfolio management in China.	To examine the oil-coal portfolios' optimal weights and hedge ratios.	We lack empirical evidence regarding the actual benefits of PPMIS and knowledge on the conditions under which PPMIS application is most beneficial	this study shows for the first time that PPMIS application is overall positively associated with the quality of portfolio management processes and project portfolio success	by using daily data from 2nd May 2018 to January 23, 2020, four different multivariate GARCH models are compared and contrasted in this paper. Then, based on the results of the four MGARCHs, we investigate the oil-coal portfolios' optimal weights and hedge ratios.	The results indicate that, first, a long-run co-integration relationship exists in China's crude oil and coal. Second, in short run, futures price of crude oil leads that of coal, the volatility spillover effect of crude oil on coal is stronger than that of coal on crude oil. Third, the DCC-GARCH model fits best for data. Last, weights of optimal portfolio and ratios of hedge show that the crude oil is a tool to make the risk of portfolio minimal in energy markets. These results are expected to have implications for energy producers, users and trading enterprises to inform their decision-making.
Zhou, Huang, Chen & Gao (2024).	An End-to-End Direct Reinforcement Learning Approach for Multi-Factor Based Portfolio Management.	This paper examined the end-to-end online portfolio decision model within the framework of direct reinforcement learning, seamlessly integrating the multi-	This integration is achieved by tuning the neural network parameters directly with respect to the reward function, designed	Utilizing real market data, we evaluate the proposed method against several benchmark portfolios in out-of-	This study develops an online updating scheme for computing the gradient in back propagation by providing explicit formulas for MV portfolio derivatives through the portfolio optimization layer. Utilizing real market data,	The experiments demonstrate that our approach not only outperforms these benchmarks across various performance metrics but is also transparent to factor analysis, a favorable trait for practitioners.

		factor model and mean-variance (MV) portfolio optimization.	as a combination of the prediction error and realized MV utility.	sample tests	we evaluate the proposed method against several benchmark portfolios in out-of-sample tests.	
Watt (2024).	Project portfolio management: Navigating crises and long-term success.	This paper aims to review the latest management developments across the globe and pinpoint practical implications from cutting-edge research and case studies.	This briefing is prepared by an independent writer who adds their own impartial comments and places the articles in context.	This briefing is prepared by an independent writer who adds their own impartial comments and places the articles in context	This briefing is prepared by an independent writer who adds their own impartial comments and places the articles in context's	Through an organization examining its performance, assessing its resources, and creating a flexible but sustainable project portfolio, a firm can successfully navigate severe crises such as the COVID-19 pandemic.
Ahlemann, Bergan, Karger, Greulich & Reining (2024).	Making Sense of Projects—Developing Project Portfolio Management Capabilities.	To Making Sense of Projects—Developing Project Portfolio Management Capabilities.	In response, we conducted a multiple-case study with 50 interviewees to develop a theoretical model of the PPM capability-building process	This model is built on the notion of organizational sense making and identifies aspects that comprehensively explain why it usually takes so long to develop PPM capabilities	This study conducted a multiple-case study with 50 interviewees to develop a theoretical model of the PPM capability-building process. This model is built on the notion of organizational sense making and identifies aspects that comprehensively explain why it usually takes so long to develop PPM capabilities.	We conceptualize the PPM capability-building process as one that is strongly influenced by (1) the effects of structural rearrangements, (2) the appropriate use of external resources during that process, (3) the role of executive support and legitimization, (4) episodes of regression, and (5) the need for internalization and habitualization. In addition, we provide starting points for explaining organizational capability building in more general terms.
Punyaleadtip, Kantavat, Nimmanunta & Kijsirikul (2024).	Black–Litterman Portfolio Management Using the Investor's Views Generated by Recurrent Neural Networks and Support Vector Regression.	To examine the Black–Litterman Portfolio Management Using the Investor's Views Generated by Recurrent Neural Networks and Support Vector Regression.	The model allows investors to provide their insights by creating a subjective view of future expected returns from their knowledge and	, the authors propose a new method to find the investor's views using a combination of the long short-term memory model	In this article, the authors propose a new method to find the investor's views using a combination of the long short-term memory model with support vector regression for use as inputs to the Black–Litterman model. Then the model is tested in two different markets: an	The experimental findings demonstrate that the portfolios constructed using our proposed approach consistently outperform buy-and-hold portfolios in both countries.

			personal experience.	with support vector regression for use as inputs to the Black–Litterman model	emerging market (SET Index of the Thai equity market) and a developed market (Dow Jones Index of the US equity market).	
Alshahrani, Mohamed, Mukhtar & Mokhtar (2023).	The adoption of the e-portfolio management system in the Technical and Vocational Training Corporation (TVTC) in Saudi Arabia.	To examine the adoption of the e-portfolio management system in the Technical and Vocational Training Corporation (TVTC) in Saudi Arabia.	The Electronic Portfolio Management System (EPMS) is one such system, but despite its importance, its extensive adoption among institutions remains low because the end-user rejects its use. EPMS adoption in Technical and Vocational Training Corporation (TVTC).	The study used a quantitative approach in which copies of an online questionnaire were passed and distributed to 375 respondents in TVTC institutions	The analysis of the collected data was done using AMOS-SEM 3 statistical software. The finding revealed that technology, organization, and environment, which are second-order factors, had significant and positive effects on EPMS adoption.	The finding revealed that technology, organization, and environment, which are second-order factors, had significant and positive effects on EPMS adoption. The results also supported a substantial relationship between EPMS adoption and the performance of employees (Academicians and Managerial), with the entire first-order factors comprising of technological factors, namely perceived usefulness, perceived ease of use, perceived information quality, perceived system quality, and perceived service quality, organizational factors, namely financial support, top management support and training, and environmental factors, namely cloud computing ability, government role, and big data facility were examined for their role in the adoption of EPMS among Saudi TVTC, and were and were found to be significant and accounted 43% of the variance in the EMPS adoption. At the same time, the EPMS adoption explains 39% of the variance extracted from employees' performance. This
Aghajani, Ruge and Jugdev (2023).	An Integrative Review of Project Portfolio Management Literature: Thematic Findings on Sustainability Mindset, Assessment, and Integration.	To examine the Sustainability integration in project portfolio management helps shape strategic, organizational, and project-based contexts.	The authors conducted a structured literature review from 2000 to 2021 and developed a novel integrative framework presenting	Noteworthy progress has been made at the strategic and portfolio levels toward framing a Sustainability mindset (definition, values,	The authors conducted a structured literature review from 2000 to 2021 and developed a novel integrative framework presenting a holistic view highlighting three substantive research themes: Sustainability mindset, Sustainability assessment, and	Sustainability integration in project portfolio management helps shape strategic, organizational, and project-based contexts.

				a holistic view highlighting three substantive research themes	and principles) and developing frameworks/tools for Sustainability assessment and project portfolio selection	Sustainability integration in project portfolio processes. Noteworthy progress has been made at the strategic and portfolio levels toward framing Sustainability	
Cheng, Shadabfar and Khoojine (2023).		A State-of-the-Art Review of Probabilistic Portfolio Management for Future Stock Markets.	The primary objective of portfolio management is to make investments with the most favorable rate of return and the lowest amount of risk.	These methodologies are in question, and it is unclear to what extent their results can be relied upon. Therefore, probabilistic approaches have also entered the research arena, and attempts have been made to incorporate uncertainty into future forecasting and portfolio management.	The primary objective of portfolio management is to make investments with the most favorable rate of return and the lowest amount of risk.	The combination of these two approaches, i.e., predicting the future stock price and adopting portfolio management methods in the forecasted time series, has turned out to be a novel research line in the past few years. That is, to have a better understanding of the future, various researchers have attempted to predict the future behavior of stocks and subsequently implement portfolio management techniques on them.	The probabilistic portfolio management method is applied to future Shanghai Stock Exchange data in the form of a case study to measure the applicability of this method to real-world projects. The results of this research can serve as a benchmark example for the analysis of other stock market data.
Martinsuo (2013).		Project portfolio management in practice and in context.	The purpose is to report a review on recent empirical research literature regarding project portfolio management, to draw attention to the	The limitations with viewing portfolio management as a rational decision process, and to develop new avenues	These alternative perspectives offer new insight into the dilemmas identified in day-to-day project	At the center of this paper is the need to understand project portfolio management in practice and in context.	As a result, this paper shows that, to respond to uncertainties and complexities in business environments, project portfolio management can be viewed as negotiation and bargaining and as structural reconfiguration, besides rational decision processes. These alternative perspectives offer new insight into the dilemmas identified in day-to-day

			limitations with viewing portfolio management as a rational decision process, and to develop new avenues for research regarding project portfolio management in practice and in context.	for research regarding project portfolio management in practice and in context.	portfolio management and open up avenues for resolving them, thereby promoting success in project portfolio management		project portfolio management and open up avenues for resolving them, thereby promoting success in project portfolio management.
Mantha and Rao (2015).	Portfolio Management.	To achieve the following goals: Maximize the profitability or value of the portfolio, Provide balance, and Support the strategy of the enterprise. Portfolio Management is the responsibility of the senior management team of an organization or business unit.	The second step is to understand the budget or resources available to balance the portfolio against. Third, each project must be assessed for profitability (rewards), investment requirements (resources), risks, and other appropriate factors	Often, this is the same group that conducts the stage-gate reviews in the organization. A logical starting point is to create a product strategy - markets, customers, products, strategy approach, competitive emphasis, etc	Portfolio Management is used to select a portfolio of new product development projects to achieve the following goals: Maximize the profitability or value of the portfolio, Provide balance, and Support the strategy of the enterprise.		The weighting of the goals in making decisions about products varies from company. But organizations must balance these goals: risk vs. profitability, new products vs. improvements, strategy fit vs. reward, market vs. product line, long-term vs. short-term. Several types of techniques have been used to support the portfolio management process: Heuristic models, Scoring techniques, Visual or mapping techniques. The earliest Portfolio Management techniques optimized projects' profitability or financial returns using heuristic or mathematical models. However, this approach paid little attention to balance or aligning the portfolio to the organization's strategy. Scoring techniques weight and score criteria to take into account investment requirements, profitability, risk and strategic alignment. The shortcoming with this approach can be an over emphasis on financial measures and a Sustainability to optimize the mix of projects.
Müller R. & Martinsuo M. (2018).	Project Portfolio Control and Portfolio Management Performance in Different Contexts.	This article investigates the nature and relationship of project portfolio control techniques	A worldwide questionnaire with 242 responses was used, of which	Two measures for portfolio management performance were identified	A worldwide questionnaire with 242 responses was used, of which 136 high-performing responses were filtered out for quantitative		The results indicate that different portfolio control mechanisms are associated with different performance measures. A contingency model was developed, including moderating effects by contextual variables.

		and portfolio management performance, and how this relationship is moderated by situational idiosyncrasies of internal and external dynamics, industries, governance types, and geographic location.	136 high-performing responses were filtered out for quantitative analysis of best practices.	: achievement of desired portfolio results and achievement of project and program purpose	analysis of best practices. Three portfolio control factors were identified: portfolio selection, portfolio reporting, and decision making style. Two measures for portfolio management performance were identified: achievement of desired portfolio results and achievement of project and program purpose.	
Agrawal & Khizrai (2022).	Research Paper on Portfolio Management.	To examine the Portfolio Management.	In investment a person has to think on the basis of both analytical and emotional outlook. It is difficult to find someone	Instead, they want to invest in a group of securities that combination of securities or group of securities is known as portfolio.	Portfolio management , group of investments, long- term financial objectives and risk tolerance were studied.	Portfolio is created it reduces the risk and maximizes the returns. Portfolio management is the art and science of selecting and overseeing a group of investments that meet the long-term financial objectives and risk tolerance of a client or company.

2.3 Research Gap

After reviewing various articles, books, publications, and unpublished research in the field, it's evident that portfolio management holds significant importance within the realm of finance, as it can strongly impact investments (Kumakov, 2020). While portfolio management is not a new concept and has been extensively researched by many scholars, no specific study has yet fully delved into the topic and successfully achieved its specified research objectives.

The previous studies on portfolio management in banks were conducted during different time periods (Parajuli, 2011; Jaiswal, 2012). Given this, there was a need for new research focusing on more recent periods. In this study, data and information from sample banks spanning from 2013/14 to 2022/23 were included. Additionally, the investment portfolio management of five specific banks

(SANIMA, EBL, SCBNL, SBI, and SBL) was not covered in previous research. To address this gap, a new study was warranted to evaluate these three banks.

While this study is not entirely novel in its topic, it differs fundamentally from previous research. Previous studies primarily focused on the risk and return aspects of selected commercial banks from investors' perspectives. However, this research aims to identify correlations among the returns of commercial banks, analyze systematic and unsystematic risks for each bank, and calculate return portfolios and standard portfolios for SANIMA, EBL, SCBNL, SBI, and SBL across three different portfolios.

Moreover, while previous researchers conducted individual analyses of sampled banks, this study conducts a comparative analysis between banks. Additionally, while previous studies typically utilized data from the last five years, this study extends the timeframe to the last ten years (2013/014 to 2022/23). Furthermore, efforts have been made to ensure the study's uniqueness by avoiding duplication from other related research and presenting new data, language, and overall presentation.

CHAPTER III
RESEARCH METHODOLOGY

Research methodology encompasses the systematic approach employed by researchers to collect data for a research project. It outlines the sequential steps undertaken to address a problem with a specific objective in mind, detailing the method and process utilized throughout the study. It serves as a structured framework for resolving research problems, incorporating various elements such as dependent and independent variables, research design, research questions and hypotheses, sampling methods, data collection techniques, and data analysis procedures. In essence, research methodology guides researchers in systematically gathering, analyzing, and interpreting facts and figures to arrive at solutions for the identified problem (Kothari, 2019).

3.1 Research Design

Research design encompasses the overall plan, structure, and strategy devised to address research questions and manage variability in investigations. It involves arranging conditions for data collection and analysis to ensure relevance to the research purpose while optimizing efficiency in procedures. In alignment with the objectives of this study, a specific research design has been implemented. To fulfill these objectives, a combination of descriptive and analytical research design has been employed. The descriptive research design serves to outline the general patterns observed in investors' behavior, the business environment, and the challenges of portfolio management. Meanwhile, the analytical research design involves the examination and analysis of gathered information and data. Much of the data and information examined in this study pertains to past phenomena, spanning from the fiscal year 2013/014 to the fiscal year 2022/023. The study primarily focuses on conducting risk and return analysis and constructing optimal investment portfolios in common stocks. As evident from the study's title, it leans more towards analytical and empirical approaches rather than being predominantly descriptive.

3.2 Population & Sample of the Study

The population, or universe, refers to the entirety of objects or results obtained from a specific operation. In the context of this study, the population of data pertains to the data encompassing all organizations within the defined scope, particularly

focusing on commercial banks in Nepal. A sample, on the other hand, represents a subset of the population selected for the purpose of investigating its characteristics. In this study, the sample data are derived from a selection of organizations within the population. Specifically, the population comprises all currently operational commercial banks in Nepal, totaling 20 banks. From this population, a sample consisting of five banks will be selected. The method employed for selecting the sample organizations is judgmental sampling, where the selected banks for analysis are as follows:

- Sanima Bank Limited
- Everest Bank Limited
- Standard Chartered Bank Nepal Limited
- Nepal SBI Bank Limited
- Siddhartha Bank Limited

3.3 Nature & Sources of Data

Secondary data refers to information that has been collected by an investigator or agent for statistical inquiry, either from published or unpublished sources. This data is not original but rather obtained from existing sources. In this study, the primary source of data is secondary, collected from various sources such as Nepal Rastra Bank, NEPSE, SEBO, as well as libraries, periodicals, economic journals, and other published and unpublished reports.

3.4 Method of Data Collection

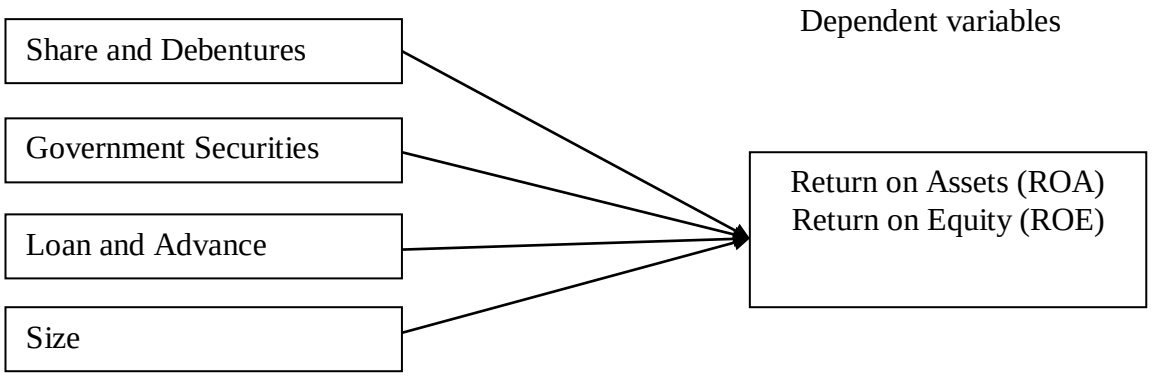
This study utilized data collected primarily from published sources, including correspondent offices and their respective websites. Annual reports spanning a period of ten years were obtained from the websites of selected banks. Additionally, information concerning the profile of sample banks and related documents were sourced from various internet websites. Unpublished master's theses, books, research papers, articles, and journals were mainly sourced from the Centre Library of Tribhuvan University and publications from Nepal Rastra Bank. Magazines and newspapers were acquired from relevant authorities.

3.5 Data Analysis Tools

To conduct risk and return analysis effectively and meaningfully in line with the study's objectives, a range of analytical tools, especially financial and statistical ones, can be employed.

3.6 Research Framework

Independent variables



(Source: Agblobi, Kuhorfah & Asamoah, 2020)

Figure 1: Research Framework

Share and Debentures

Shares represent ownership in a company and involve market risks, while debentures represent and offer fixed interest payments. Understanding the difference between shares and debentures is essential for making informed investment decisions.

Government Securities

Government securities are government debt issuances used to fund daily operations, and special infrastructure and military projects. They guarantee the full repayment of invested principal at the maturity of the security and often pay periodic coupon or interest payments.

Loan and Advance

The key difference between loans and advances is their purpose. Loans are typically used for long-term financing needs, such as purchasing a property or a vehicle. In contrast, advances are used for short-term financing needs, such as paying for inventory or covering expenses until the next payment cycle.

Bank Size

This ratio represents the ownership of assets by banks**.** High asset ownership enables banks to offer more financial services at low cost.

Return on Assets

Return on assets is a profitability ratio that provides how much profit a company can generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in earning a profit from their economic resources or assets on their balance sheet

Return on Equity

Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company’s assets minus its debt, ROE is considered the return on net assets.

CHAPTER-IV
RESULTS AND DISCUSSION

The analysis is fully based on secondary data. In presentation section, data are presented in terms of table and charts. The presented data are then analyzed using different statistical tools mentioned in chapter three. At last the results of analysis are interpreted. However, there is no distinct line of demarcation for each section (like presentation section, analysis section & interpretation section).

The main purpose of analyzing data is to change it from an unprocessed from to an understandable presentation which consists of organizing, tabulating and performing the statistical data. The presentation of data is the basic organization and classification of the data for analysis. This is the section where, the filtered data are presented and analyzed. This is one of the major chapters of this study because it includes detail analysis and interpretation of data from which concrete result can be obtained.

Detail data of SDD, LAD, GS, SZ, ROA and ROE and total dividend of each bank and their interpretation and Analysis is done with reference to the various reading and Literature review in the preceding chapter. Efforts are made to analyze and diagnose the recent banking index movement. This is sub-index of NEPSE, with a special reference to the listed commercial banks.

4.1 Data Presentation

Investment Operations of CBs

Investment stands as a crucial function for commercial banks (CBs) due to its potential to optimize returns while mitigating risks.

The investment policy serves as a guiding framework for banks, enabling them to efficiently manage their investment operations to achieve maximum returns with minimal risk exposure, ultimately contributing to their success. CBs are tasked with mobilizing their funds into sectors that offer profitability, security, and marketability, thereby enhancing their profitability.

Furthermore, CBs are obligated to meet the credit requirements of various sectors of the economy, including industry, commerce, social services, securities, and agriculture. In the contemporary banking landscape, investment strategies play a

pivotal role, with CBs assuming a significant responsibility in driving economic development within the country.

Table: 1

Investment on Government Securities

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	71.10	71.20	78.20	45.20	58.20
2014/015	79.58	69.20	69.25	67.25	67.45
2015/016	85.36	77.25	57.25	68.52	69.20
2016/017	72.26	66.25	66.25	75.20	47.50
2017/018	77.25	65.23	45.25	88.27	67.25
2018/019	86.91	58.04	48.66	74.20	64.20
2019/020	78.25	66.83	57.58	69.25	53.20
2020/021	77.16	56.80	59.10	64.20	64.70
2021/022	75.42	48.41	52.34	65.20	88.20
2022/023	39.12	45.35	37.88	45.20	72.10
Average	**74.17**	**55.09**	**51.11**	**68.94**	**65.22**

Source: Annual Reports of Sample

Table 1 show the structure of investment in government securities held by the sample CBs. Investments on government securities includes the investment on Nepal government treasury bills, investment on Nepal government saving bonds and the investment on Nepal government other bonds.

The investment on Govt. securities of EBL is highest among other banks. During the ten year study period, in average EBL investment 74.17% on government securities out of total investment.

The SBI has been found to have investment on government securities lower comparative to other banks i.e. 51.11 of the total investment. Similarly the SCBNL is in second position by investing 55.09% of the total investment. From this analysis it is clear that there is no similar trend of investment on government securities made by CBs.

Table: 2

Share and Debenture

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	1.75	1.47	1.45	2.36	2.34
2014/015	1.52	1.39	1.25	1.29	0.88
2015/016	1.36	1.48	0.78	0.79	1.35
2016/017	1.47	1.36	1.25	1.23	1.72
2017/018	1.25	1.26	0.36	0.71	1.35
2018/019	2.04	1.17	0.77	0.88	2.05
2019/020	1.41	1.47	0.98	0.72	3.24
2020/021	1.41	1.43	1.67	2.36	1.72
2021/022	0.28	1.28	2.67	1.40	2.39
2022/023	0.97	1.36	2.23	2.37	2.01
Average	1.22	1.34	1.66	1.411	1.905

Source: Annual Reports of Sample Banks

Table 2 shows the structure of investment share & debenture. The investment on share and debenture of SBI is highest among other banks. During the Ten year study period, in average SBI investment 1.66% on share & debenture out of total investment. The EBL has been found to have investment on share & debenture lower comparative to other banks i.e. 1.22% of the total investment. Similarly the SCBNL is in second position by investing 1.34% of the total investment.

Loan and Advance to Total Deposit Ratio

This ratio evaluates the bank's capacity to utilize depositors' funds effectively to generate profits through lending and advances. Additionally, it assesses the bank's success in attracting deposits for profit-making purposes.

Table: 3

Loan and Advance to Total Deposit Ratio

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	76.984	49.113	51.205	70.859	80.566
2014/015	73.225	55.132	49.616	86.412	75.357
2015/016	76.572	58.628	49.376	63.2	77.361
2016/017	78.01	56.867	65.539	88.356	71.82
2017/018	66.628	48.919	56.546	60.939	75.373
2018/019	73.517	56.88	54.765	74.772	79.121
2019/020	80.449	64.384	76.495	75.913	84.087
2020/021	77.851	66.449	85.915	80.898	83.318
2021/022	87.01	73.46159	90.52	82.588	86.188
2022/023	76.69	58.87	64.44	75.99	79.24
Average	76.69	58.87	64.44	75.99	79.24

Source: Annual Reports of Sample Banks

Table 3 illustrates the allocation of total deposits towards loans and advances. The average ratio of total loans and advances to total deposits for SANIMA, EBL, and SDBL exceeds that of SCBNL and SBI. This suggests that SANIMA, EBL, and SDBL prioritize utilizing deposits for loan disbursement compared to the other sample banks.

On average, approximately 79.24%, 76.69%, and 75.99% of the deposits collected by SANIMA, EBL, and SDBL, respectively, are allocated towards providing a significant portion of loans and advances, in contrast to other banks.

Consequently, it can be inferred that SANIMA, EBL, and SDBL have utilized more than half of their total deposits for extending loans and advances to generate interest income compared to other banks. From the perspective of loan and advance deviation, SBI appears to be riskier than other sample banks, while from the standpoint of return and homogeneity, SANIMA outperforms the other sample banks.

Table: 4

Bank Size

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	44	15	50	39	45
2014/015	48	15	56	49	36
2015/016	54	15	56	52	39
2016/017	53	15	56	51	41
2017/018	65	12	56	82	42
2018/019	61	12	62	74	42
2019/020	65	12	62	55	42
2020/021	82	12	72	55	47
2021/022	94	15	88	55	55
2022/023	62	13	62	56	59
Average	62.8	13.6	62	56.8	44.8

Table 4 Shows depicts that, the Bank Size of EBL, SCBNL, SBI, SDBL, and SANIMA. This column indicates the financial year for which the data is recorded. It spans from 2013/2014 to 2022/2023. This column shows the EBIT (Earnings before Interest and Taxes) for Everest Bank Limited for each fiscal year. This column displays the EBIT for Standard Chartered Bank Nepal Limited for each fiscal year. This column shows the EBIT for State Bank of India for each fiscal year. This column displays the EBIT for Siddhartha Bank Limited for each fiscal year. This column shows the EBIT for Sanima Bank Limited for each fiscal year. The "Average" row at the bottom provides the average EBIT across all the listed banks for each fiscal year. Overall, this data allows you to analyze the financial performance of these banks over the specified period, particularly in terms of their earnings before taxes and interest.

Return on Assets of Selected Banks

ROA, also known as the profit-to-assets ratio, evaluates the profitability of a firm's total investments. It signifies the efficiency of a company in utilizing its assets to generate profit. A higher ROA indicates greater profitability, suggesting that the company generates more profit relative to its total assets. Conversely, a lower ROA indicates lower profitability.

Table 5

Return on Assets

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	2.11	2.80	1.01	2.38	0.88
2014/015	2.39	2.67	1.19	2.43	1.39
2015/016	2.25	2.51	1.5	2.8	1.46
2016/017	1.85	1.99	1.7	2.89	1.55
2017/018	1.59	1.98	2	2.06	1.78
2018/019	1.83	1.84	1.57	2.32	1.86
2019/020	1.97	2.61	1.97	2.69	1.85
2020/021	1.94	2.61	1.94	2.61	2.07
2021/022	1.42	1.71	1.17	2.06	1.41
2022/023	0.89	1.71	0.7	2.47	1.41
Average	1.84	2.27	1.51	2.49	1.71

Table 5 shows that the return of assets ratio of SBI, SDBL, SCBNL, SANIMA and EBL respectively. The ten years study period shows that the SDBL Bank Limited and SCBNL of ROA is higher than EBL,SANIMA and SBI respectively, that means SDBL and SCBNL have been properly utilizing its assets to increase the turnover than EBL,SANIMA and SBI. High ratio indicates efficient utilization and less than 2 times indicates underutilization. As a result the SBI, SANIMA and EBL banks are under utilization of own assets to compare to the SDBL and SCBNL. The risk analysis point of views, the standard deviation of SBI and SCBNL is higher than SANIMA, SDBL and EBL. It shows SBI and SDBL banks are little bit more risk to invest by shareholders. Likewise, the C.V of SBI and SCBNL are higher than SCBNL, SDBL and EBL which shows that EBL and SDBL bank of ROA is more consistency than other banks. The return point of views, SDBL and SCBNL are better than other banks to compare nine years data.

Return on Equity

Return on equity (ROE) measures the rate of return on the ownership interest of the common stock owners. It measures a firm's efficiency at generating profits from every unit of shareholders' equity. It shows how well a company uses investment funds to generate earnings growth. The higher ROE is good from the prospective of shareholders and it creates the better image about the organization. But, aggressive

investment in different sectors with the hope of getting high return might ruin the business and create heavy losses**.** Shareholder's wealth maximization, one of the main objectives of the commercial banks can be fulfilled by an adequate return on the shareholder's fund. ROE is the measuring rod of the profitability of bank. It reflects the extent to which the bank has been successful to mobilize or utilize its equity capital. This ratio also facilitates to evaluate whether the bank's earnings for its equity holders is satisfactory (adequate) or not. A high ratio represents the sound management and efficient mobilization of the owner's equity. This ratio is calculated by dividing net profit by total shareholders capital fund.

Table 6

Return on Equity (ROE)

Fiscal Year	**EBL**	**SCBNL**	**SBI**	**SDBL**	**SANIMA**
2013/014	29.92	28.36	15.02	15.20	5.72
2014/015	32.92	26.38	20.31	19.30	12.58
2015/016	30.14	26.27	22.85	17.20	15.09
2016/017	25.50	21.69	21.551	16.20	18.19
2017/018	22.46	17.18	22.16	17.20	22.69
2018/019	19.50	11.98	14.85	30.20	14.39
2019/020	17.60	18.66	15.81	27.45	18.67
2020/021	18.09	19.49	16.2	21.10	23.2
2021/022	13.88	15.15	10.44	22.10	16.09
2022/023	8.556	9.44	6.26	23.10	18.54
Average	21.85	1.46	16.54	20.90	16.51

Table show it is seen that EBL has recorded highest ratio in all five F/Y 2013/014 to 2022/23 i.e. 29.92, 32.92, 30.14, 25.50, 22.46, 19.50, 17.60, 18.09, 13.88 and 8.556 respectively. The SCBNL 28.36, 26.38, 21.69, 17.18, 11.98, 18.66, 19.49, 15.15 and 9.44 respectively. The SDBL 15.20, 19.30, 17.20, 16.20, 16.20, 17.20, 30.20, 27.45, 21.10, 22.10 and 23.10 respectively. The SBI Return on Equity value is fiscal year 2013/014 to 2022/023 is 5.72, 12.58, 15.09, 18.19, 23.2, 16.09, and 18.54 respectively. It reflects that SANIMA is very much stronger to earn high profit of its shareholder in comparison to other banks. Therefore from the consistency in earning throughout the studied period point of view SBI SDBL, SCBNL, EBL and SANIMA are placed for 1st, 2nd and 3rd position. Overall highest in mean ratios SCBNL

among all shows that it has been efficiently utilize shareholder's fund in consistency point of view also SBI SDBL, SCBNL, EBL and SANIMA has been able to utilize its shareholder's fund in proper way.

Table 7

Descriptive Analysis

Variables	**ROA**	**ROE**	**SAD**	**GS**	**L/D**	**SIZE**
Average (Mean)	1.62	28.21	65.63	80.23	0.91	0.78
Std. Deviation	28.12	5.30	11.41	5.21	0.26	0.36
C.V.	17.01	42.00	12.20	6.25	0.42	0.31
Minimum	1.23	31.25	.58	61.18	36.30	45.19
Maximum	2.03	61.21	1.16	83.25	62.12	68.11

Source: Annual report of selected banks

Table 7 provides descriptive statistics for the ROA and cash reserve ratio variables. The mean ROA over the study period is 1.64%, with a minimum value of 1.19% and a maximum of 2.03%. Similarly, the mean cash reserve ratio is 1.62%, ranging from a minimum of 1.23% to a maximum of 2.03%. The standard deviation for the cash reserve ratio is 0.46%, while for the ROA, it is 28.12% over the ten-year period.

4.2 Correlation Analysis

Correlation analysis, a statistical technique, is employed in research to assess the strength of the linear relationship between two variables and determine their association. Essentially, it gauges how changes in one variable correspond to changes in another. A high correlation indicates a robust relationship between the variables, while a low correlation signifies a weaker connection. In market research, correlation analysis is utilized to scrutinize quantitative data gathered through methods like surveys and polls. Researchers aim to uncover relationships, patterns, significant associations, and trends between various variables or datasets. The correlation coefficient is a key statistical measure closely associated with this type of analysis.

Table 8

Correlations Matrix

Variables		ROA	ROE	SAD	GS	L/D	SIZE
ROA	Pearson Correlation	1					
	Sig. (2-tailed)						
ROE	Pearson Correlation	-.402	1				
	Sig. (2-tailed)	.249					
SAD	Pearson Correlation	.740*	-.761*	1			
	Sig. (2-tailed)	.014	.011				
GS	Pearson Correlation	-.430	-.396	-.155	1		
	Sig. (2-tailed)	.214	.257	.668			
L/D	Pearson Correlation	-.670*	.594	-.749*	.230	1	
	Sig. (2-tailed)	.034	.070	.013	.523		
SIZE	Pearson Correlation	.712*	-.818**	.943**	.035	-.783**	1
	Sig. (2-tailed)	.021	.004	.000	.923	.007	.004

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

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

Table 8 shows the relationships between six variables: ROA, ROE, being dependent SAD, GS, L/D and SIZE are independent variables. The matrix displays the Pearson correlation coefficient for each pair of variables, which measures the strength and direction of the linear relationship between them. The Pearson correlation coefficient ranges from -1 to 1, where -1 indicates a perfect negative correlation, 0 indicates no correlation, and 1 indicates a perfect positive correlation Starting with the diagonal elements, the correlation of a variable with itself is always 1, as it is perfectly correlated with itself.

Moving on to the other elements of the matrix, it can see that there is a significant positive correlation between SAD and ROA (0.740) and between SAD and SIZE

(0.943), with p-values of 0.014 and 0.000, respectively. There is a negative correlation between ROE and ROA (-0.402), which is not statistically significant (p=0.249). This implies that there is a weak negative relationship between the two measures of profitability, but the correlation is not strong enough to be considered statistically significant. GS is negatively correlated with ROA (-0.430), ROE (-0.396), and SAD (-0.155), but these correlations are not statistically significant. This suggests that there may be some weak relationship between interest rate spread and these variables, but it is not strong enough to be considered significant. There is a strong negative correlation between L/D and ROA (-0.670), which is statistically significant (p=0.034). This suggests that as the Loan and advance ratio decreases, the return on assets tends to increase. Finally, there is a strong positive correlation between SIZE and SAD (0.943) and a strong negative correlation between SIZE and ROE (-0.818), both of which are statistically significant (p=0.000 and p=0.004, respectively). In summary, the correlation matrix provides insight into the relationships between the six variables and highlights the strength and direction of their linear relationships.

4.3 Regression Analysis

Regression analysis, an inferential statistical method, is employed to estimate the impact of one or more independent variables on a dependent variable.

Table 9

ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.255	7	.465	2.711	.035[b]
	Residual	3.774	22	.172		
	Total	7.029	29			

a. Dependent Variable: ROA

b. Predictors: (Constant), SAD, GS, L/D and SIZE

ANOVA calculations involve computing means and variances, then comparing the ratio of two variances to a critical value from a reference source to ascertain statistical significance. Estimating a treatment effect is straightforward in ANOVA.

It involves determining the difference between the mean of observations receiving the treatment and the overall mean.

Table 10

Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations	
		B	Std. Error	Beta			Zero-Order	Partial
1	(Constant)	.900	1.215		.741	.467		
	L/D	-1.543	.000	-.691	-3.548	.002	-.481	-.603
	SIZE	.027	.023	.229	1.182	.250	.104	.244
	GS	.041	.074	.102	.552	.586	-.021	.117
	SAD	-.245	.146	-.396	-1.679	.107	.114	-.337

Table 10 presents the correlation analysis conducted to examine the relationships among the study variables, focusing separately on ROA and L/D. The results indicate a negative correlation between ROA and L/D (-1.543), suggesting that sample banks have accumulated profits heavily and maintained optimal capital levels. However, the corresponding p-value of 0.21 exceeds the significance level of 0.05, indicating that there is no statistically significant relationship between ROA and L/D.

Table 11

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.657[a]	.432	.243	3.57125	.432	2.283	7	21

Table 11 presents the results of a linear regression analysis, outlining various key metrics to assess the model's performance. The coefficient of determination (R-squared) for the model is 0.657, suggesting that approximately 65.7% of the variance in the dependent variable is explained by the independent variables. The adjusted R-squared, considering the number of predictors, is 0.243. The standard error of the estimate is 3.57125, representing the average deviation between the observed and predicted values. The change statistics display the alterations in R-

squared and F-value as each predictor is introduced into the model. The R-squared change of 0.432 indicates a substantial contribution of the predictors to the explained variance, while the F-value of 2.283 signifies the predictors' significant influence on the model.

Table 12

ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	203.839	7	29.120	2.283	.005[b]
	Residual	267.830	21	12.754		
	Total	471.668	28			

a. Dependent Variable: ROE

b. Predictors: (Constant), SAD, GS, L/D, and SIZE

The calculations of ANOVA can be characterized as computing a number of means and variances, dividing two variances and comparing the ratio to a handbook value to determine statistical significance. Calculating a treatment effect is then trivial. The effect of any treatment is estimated by taking the difference between the mean of the observations which receive the treatment and the general mean.

Table 13

Model Summery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.757[a]	.334	.332	3.7541	.542	2.45	9	23

The model's R-squared value is 0.334, suggesting that it explains approximately 33.2% of the variance in the dependent variable. Considering the number of predictors, the adjusted R-squared value is 0.332. The standard error of the estimate is 3.7541, representing the average discrepancy between observed and predicted values in the model. The change statistics demonstrate the alterations in R-squared and F-value with the inclusion of each predictor. The R-squared change is 0.542, indicating a significant contribution of the predictors to the explained variance.

Furthermore, the F-value of 2.45 suggests that the predictors wield a significant impact on the model.

Table 14

Coefficient Table

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations	
		B	Std. Error	Beta			Zero-order	Partial
1	(Constant)	18.786	10.485		1.792	.088		
	LA	8.457E-8	.000	.462	2.249	.035	.511	.441
	SIZE	.151	.197	.158	.769	.451	.185	.165
	GS	.061	.639	.019	.096	.925	.213	.021
	SAD	-.019	1.264	-.004	-.015	.988	-.301	-.003

Table 14 presents the coefficient table from a linear regression analysis involving four predictor variables (LA, SIZE, GS, SAD) and one outcome variable. This table includes unstandardized coefficients, standardized coefficients (Beta), t-values, and p-values for each predictor variable, along with the constant term. Additionally, the "Correlations" section displays zero-order and partial correlations between each independent variable and the outcome variable (ROE). The analysis indicates that LA and SIZE exhibit statistically significant relationships with the outcome variable ROE, with standardized coefficients of .462 and .158, respectively. Conversely, the predictors GS and SAD do not demonstrate significant relationships with the outcome variable.

4.4 Discussion

The studies conducted by Aghajani et al. (2023) and Alshahrani et al. (2023) offer significant contributions to different areas of management research. Aghajani et al. primarily focus on the adoption of Electronic Portfolio Management Systems (EPMS) within the Technical and Vocational Training Corporation (TVTC) in Saudi Arabia. Their research employs quantitative methods to investigate the factors influencing EPMS adoption and its subsequent impact on employee performance.

Key dimensions explored in their study include technological, organizational, and environmental factors, shedding light on their crucial roles in organizational decision-making processes.

On the other hand, Alshahrani et al. delve into the literature surrounding project portfolio management, with a specific emphasis on sustainability-related themes. Through a structured review spanning from 2000 to 2021, they develop an integrative framework that highlights the importance of sustainability in project portfolio management. Their study emphasizes strategic alignment, organizational learning, and sustainability integration as essential components of effective portfolio processes, identifying gaps and proposing avenues for future research in this domain.

Comparing the findings of these studies with prior research reveals both similarities and differences. Both Aghajani et al. and Alshahrani et al. acknowledge the significance of incorporating technological advancements into organizational practices. While Aghajani et al. focus on EPMS adoption within a specific institution; Alshahrani et al. adopt a broader perspective by addressing sustainability integration across project portfolios.

Furthermore, both studies underscore the importance of organizational support and environmental factors in driving innovation and performance. Aghajani et al. emphasize the role of top management support and training in facilitating EPMS adoption, aligning with existing literature on organizational culture's influence on technology adoption. Similarly, Alshahrani et al. advocate for a sustainability mindset and strategic alignment at the organizational level, echoing previous research on the impact of organizational values on project outcomes.

Moreover, both studies emphasize the need for rigorous methodology and empirical validation to advance theoretical and practical understanding in their respective fields. While Aghajani et al. employ quantitative analysis to assess EPMS adoption's impact on employee performance; Alshahrani et al. utilize a structured literature review to develop an integrative framework for sustainability integration in project portfolio management.

In conclusion, the studies by Aghajani et al. and Alshahrani et al. contribute valuable insights to management research, addressing contemporary challenges and offering

practical implications for organizational decision-makers. Their rigorous methodologies and comprehensive analyses advance knowledge in their respective domains, fostering sustainable practices and informed decision-making processes.

CHAPTER - V
SUMMARY AND CONCLUSION

5.1 Summary

The study on portfolio management of commercial banks in Nepal focuses on examining investment decisions within five selected banks: Sanima Bank Limited, Everest Bank Limited, Standard Chartered Bank Nepal Limited, Nepal SBI Bank Limited, and Siddhartha Bank Limited. The objectives encompass assessing the current state of portfolio management, analyzing its relationship with the financial performance of banks, and evaluating the impact of investment choices on bank performance. Despite limitations such as a narrow sample size and reliance on secondary data, the research employs a descriptive and analytical research design spanning fiscal years 2013/014 to 2022/023. Data are primarily sourced from publications, government agencies, and libraries and analytical tools include financial and statistical methods. The research framework delineates independent variables influencing portfolio management and their impact on dependent variables.

In this research, the study delves into the dynamics of commercial banks, focusing on their profile, problems, objectives, and the rationale behind the research. The literature review section explores both theoretical and empirical aspects, identifying existing research gaps. Methodologically, the research design is outlined, detailing population and sample selection, data sources, collection methods, and analysis tools. The presentation and analysis of data involve correlation and regression analyses, leading to discussions on the findings. The summary encapsulates the main points discussed, while the conclusion highlights key takeaways and implications for further research or practical applications.

This study sheds light on the portfolio management practices of selected commercial banks in Nepal, offering valuable insights into their investment decisions and their impact on financial performance. The findings highlight the significance of factors such as non-performing loans, loan-to-deposit ratios, and bank size in influencing profitability metrics. However, it is essential to acknowledge the limitations of the study, including the small sample size, reliance on secondary data, and the narrow scope focusing solely on portfolio management decisions.

5.2 Conclusion

The analysis presented in this study provides valuable insights into the portfolio management practices of commercial banks in Nepal, focusing on selected banks: Sanima Bank Limited, Everest Bank Limited, Standard Chartered Bank Nepal Limited, Nepal SBI Bank Limited, and Siddhartha Bank Limited. The correlation matrix elucidated several significant relationships among key variables. Notably, a positive correlation was observed between the Percentage of Non-Performing Loans (SAD) and both ROA and bank size, indicating that as non-performing loans increase, so does the return on assets and the size of the bank.

Conversely, a negative correlation was found between ROE and ROA, although statistically insignificant, suggesting a weak negative relationship between profitability measures. Additionally, a strong negative correlation between Loan-to-Deposit Ratio (L/D) and ROA was observed, implying that as the loan-to-deposit ratio decreases, the return on assets tends to increase. Furthermore, linear regression analysis revealed that the model accounted for 65.7% of the variance in the dependent variable, with predictors significantly impacting the model, as indicated by the F-value. However, ANOVA results did not yield significant relationships between ROA and the Asset-to-Deposit Ratio (A/D), signifying a lack of statistical significance. Nevertheless, the study underscores the importance of portfolio management decisions in influencing the financial performance of commercial banks in Nepal.

This study sheds light on the portfolio management practices of selected commercial banks in Nepal, offering valuable insights into their investment decisions and their impact on financial performance. The findings highlight the significance of factors such as non-performing loans, loan-to-deposit ratios, and bank size in influencing profitability metrics. However, it is essential to acknowledge the limitations of the study, including the small sample size, reliance on secondary data, and the narrow scope focusing solely on portfolio management decisions. Future research could address these limitations by incorporating a larger sample size, utilizing primary data collection methods, and considering a broader range of variables to provide a more comprehensive understanding of portfolio management practices in Nepalese commercial banks. Overall, this study contributes to the existing literature on

banking and finance in Nepal, providing valuable insights for policymakers, practitioners, and researchers alike.

5.3 Implication

Based on the significant findings of the study, the researcher suggests that the relevant institutions and authorities, as well as others, should consider the following implications:

For commercial bank management in Nepal, the findings of this study offer actionable insights into portfolio management practices. Understanding the significant relationships identified, such as the positive correlation between non-performing loans and return on assets, can inform strategic decision-making. Management teams can utilize this knowledge to optimize portfolio compositions, minimize risk exposure, and enhance financial performance. Additionally, the observed negative correlation between the loan-to-deposit ratio and return on assets underscores the importance of prudent lending practices and maintaining a balanced portfolio to maximize profitability. Policy makers in Nepal's banking sector can leverage the findings of this study to develop and implement regulatory frameworks that promote sound portfolio management practices.

Recognizing the impact of factors such as non-performing loans and loan-to-deposit ratios on financial performance, regulatory authorities can introduce guidelines aimed at improving asset quality, liquidity management, and risk mitigation strategies. By fostering a conducive regulatory environment, policy makers can contribute to the stability and sustainability of the banking sector while safeguarding the interests of depositors and investors.

For researchers and academics, this study provides a foundation for further exploration into portfolio management practices in Nepalese commercial banks. Future studies could build upon the findings of this research by expanding the sample size, incorporating primary data collection methods, and exploring additional variables to gain a more comprehensive understanding of portfolio dynamics.

By addressing the limitations identified, such as reliance on secondary data and a narrow scope, scholars can contribute to the advancement of knowledge in banking and finance, generating valuable insights for both academia and industry practitioners.

Overall, the implications of this study extend to various stakeholders within the banking sector, offering opportunities for informed decision-making, policy formulation, and academic inquiry. By capitalizing on the insights provided, stakeholders can work towards enhancing portfolio management practices, improving financial performance, and fostering sustainable growth and development in Nepal's banking industry.

REFERENCE

Aghajani M., Ruge G., & Jugdev K. (2023). An integrative review of project portfolio Management literature: thematic findings on Sustainability mindset, assessment, and integration. *Project Management Journal, 54*(6), 124-147.

Agrawal R., & Khizrai A.A. (2022). Research paper on portfolio management. *International Journal of Research Publication and Reviews*, *3*(3), 1605-1607.

Ahlemann F., Bergan Karger, E., Greulich M. & Reining S. (2024). making Sense of Projects Developing Project Portfolio Management Capabilities. *Schmalenbach Journal of Business Research, 3*(4), 26-54.

Alaxander, et al. (2000). *Fundamentals of investments.* New Delhi: Prentice Hall of India Private Limited.

Alshahrani, J. Mohamed, M.C. Mukhtar, J.S. & Mokhtar, P. (2023). The adoption of the e-portfolio management system in the Technical and Vocational Training Corporation (TVTC) in Saudi Arabia. *International Journal of Information Management Data Insights, 3*(1), 245-275.

Berthelemy, J.C. & Varoudakis, A. (1996). *Investment Analysis and Management*. New Work: McGraw Hill.

Bhalla, S. (1983). *Financial Market Analysis.* New Delhi: Prentice Hall.

Bhandari, D. R. (2003). *Principle and practices of banking and insurance*. Kathmandu: Asia Publications.

Bhattarai, R. (2007). Effect in the Nepali Capital Market. *New Business Age,* Kathmandu: The Business Age Pvt. Ltd, *6(*2), 49-59.

Bieske L., Zinner M., Dahlhausen F. & Trends H.T. (2024). Challenges and success factors in pharmaceutical portfolio management: Cognitive biases in decision-making and their mitigating measures. *Drug Discovery Today, 28*(10), 366-387.

Cheney, J. M., & Mosses, E. A. (1995). *Fundamental of investment.* St. Paul: West Publication Company.

Cheney, K. & Mosses, M. (1995). *Financial Management.* New York: McGraw Hill Publishing Limited.

Cheng, L., Shadabfar, A. & Khoojine, A.S. (2023). A State-of-the-Art Review of Probabilistic Portfolio Management for Future Stock Markets. *Mathematics, 1*(5), 1148; https://doi.org/10.3390/math11051148.

Fama, E. F. (1965). *Foundations of Finance,* New York: Basic Books.

Francis, J. C. (2003). *Investment analysis and management* (11th ed.). Post Graduate Publications.

Francis, J. C. (2006). *Investments analysis and management.* New York: Mc-Graw Hill.

Francis, J.C (1986). *Investment Management*. New York: McGraw Hill Publishing Limited.

Francis, J.C. & Van Horne, J.C. (1997). *Security Analysis and Portfolio Management,* New York: McGraw Hill.

Francis, J.C. (1983). *Investment.* New York: McGraw Hill Publishing Limited.

Frank, K. R., & Keith, J. (2004). *Investment management* (2nd ed.). Tokyo: Dryden Press CBS Publishing Japan Ltd.

Guo Y. & Zhao H. (2024). Volatility spillovers between oil and coal prices and its implications for energy portfolio management in China. *International Review of Economics & Finance*, *89*(4), 446-457.

IAS, (1993). Financial Accounting and Reporting. *International Journal of Management.* 32,6:137

Jaiswal, A. (2012). *Portfolio management of listed commercial banks in Nepal.* An unpublished master's thesis, Tribhuvan University, Kathmandu.

John, P.C. (1943). *Investment Analysis and Management*. London: John Wiley & sons Publishing Limited.

John, S., & Edmund, W. (1997). *Oxford English Dictionary.* London: Oxford University Press.

Johns, M.W. Jr. (1998). *Financial Management.* New York: Prentic Hall.

Kock A., Schulz B., Kopmann J., & Gemünden H.G. (2022). Project portfolio management information systems' positive influence on performance the importance of process maturity. *International Journal of Project Management, 38* (4), 299-241.

Kumakov, S. N. (2020). Features of the formulation and management of the investment portfolio of commercial banks. *Economic and Innovative Technologies, 3*(2). Retrieved from https://uzjournals.edu.uz/iqtisodiyot/vol2020/iss3/2

Mallick, I. (2019). Bank portfolio management under credit market imperfections. *Journal of Mathematical Finance, 9*(3), 239-253. doi:10.4236/jmf.2019.93013

Mantha P.K. & Rao S. (2015). Portfolio Management. *Journal of Accounting & Marketing*. 4(2), 130-136.

Miia, M. (2013). Project portfolio management in practice and in context. *International Journal of Project Management, 31*(6), 794-803.

Miller, G. (1981). *Retrospectives on Public Finance*. New Work: McGraw Hill.

Müller R. & Martinsuo M. (2018). Project Portfolio Control and Portfolio Management Performance in Different Contexts. *Project Management Journal, 39*(3), 28-42.

Oliinyk, V., and Kozmenko, O. (2019). Optimization of investment portfolio management. *Serbian Journal of Management, 14*(2), 373-387.

Orabi, M. M. (2017). Assessment of investment portfolios of Jordanian banks. *European Scientific Journal, 8*(12), 1857-1881.

Parajuli, P. R. (2011). Portfolio management in Nepal. *Himalayan News Service, 5*(8).

Paudel, R. B., & Koirala, S. (2006). Application of Markowitz and Sharpe models in Nepalese stock market. *The Journal of Nepalese Business Studies, 3*(1), 18-35.

Pike, P. & Neale, J. (1996). Organizational ambidexterity: Antecedents, outcomes and moderators. *Journal of Management, 34*(1), 375-409.

Pradhan, S. (1993). *Basics of Financial Management. Kathmandu: Educational Enterprises Pvt. Ltd*

Punyaleadtip K., Kantavat P., Nimmanunta K. & Kijsirikul, B. (2024). Black–Litterman Portfolio Management Using the Investor's Views Generated by Recurrent Neural Networks and Support Vector Regression. *The Journal of Financial Data Science. 6*(1), 85-105.

Reilly, F.K. (1986). *Investments*. New York: The Dryden Press.

Ritter, U.& Silber, R. (1993). *Overview of Financial Analysis.* Levin's Financial Analysis Hand Book. New York: The Dryden Press

Roberts P. & Edwards L.H. (2022). Portfolio management: A new direction in public sector strategic management research and practice. *Willey Online Journal Library 4*(5), 156-168. https://doi.org/10.1111/puar.13633.

Rough, C.W. (1996). *Financial Management*. New Delhi: Vikas Publishing House Pvt. Ltd.

Senthilnathan, S. (2016). Risk, return and portfolio theory-A contextual note. *International Journal of Science and Research, 5*(10), 705-715. doi:10.21275/6101601

Sharpe, W.F. et al., (1999). *Investments.* New York: Prentice Hall Inc.

Sharpe, W.F. (1998). *Fundamental of Financial Management*. New York: Prentice Hall Inc.

Shrestha, K. *(2013).* Stock Investment Behavior in Nepal. *New Business Age, 1*(2), 4:56

Timsina, R. (2018). *A Study on Dividend Policy and Its Impact on Stock Price of Selected Commercial Banks.* Master's Degree Thesis, Submitted to Faculty of Management, Shanker Dev Campus Tribhuvan University.

Van Horne, J. C. (1998). *Financial Management and Policy.* New Delhi: Prentice Hall of India.

Watt P. (2024). Project portfolio management: Navigating crises and long-term success. *Strategic Direction*, *40*(2), 17-19. https://doi.org/10.1108/SD-01-2024-0005.

Weston, J. F., & Brigham, E. F. (1992). *Managerial finance* . Chicago: The Dryden Press.

Weston, J. F., & Copeland, T. E. (2003). *Managerial finance.* New York: The Dryden Press.

Weston, J.F. & Copland, T.E. (1995). *Management Finance*. London: Holt-Saunders International Edition.

Weston, J.F. & Copland, T.E. (1996). *Management Finance*. London: Holt-Saunders International Edition.

Yakubov, U., & Meliboev, D. (2020). The analysis of investment activities of commercial banks. *International Finance and Accounting, 1*(2), 47-59. Retrieved from https://uzjournals.edu.uz/interfinance/vol2020/iss2/32.

Zhou, K., Huang, X., Chen, X. & Gao, J. (2024). An End-to-End Direct Reinforcement Learning Approach for Multi-Factor Based Portfolio Management. *Journal of SSRN*, *4*(5), 266-274.

APPENDIX

Investment on Government Securities

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	71.10	71.20	78.20	45.20	58.20
2014/015	79.58	69.20	69.25	67.25	67.45
2015/016	85.36	77.25	57.25	68.52	69.20
2016/017	72.26	66.25	66.25	75.20	47.50
2017/018	77.25	65.23	45.25	88.27	67.25
2018/019	86.91	58.04	48.66	74.20	64.20
2019/020	78.25	66.83	57.58	69.25	53.20
2020/021	77.16	56.80	59.10	64.20	64.70
2021/022	75.42	48.41	52.34	65.20	88.20
2022/023	39.12	45.35	37.88	45.20	72.10
Average	**74.17**	**55.09**	**51.11**	**68.94**	**65.22**

Source: Annual Reports of Sample

Share and Debenture

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	1.75	1.47	1.45	2.36	2.34
2014/015	1.52	1.39	1.25	1.29	0.88
2015/016	1.36	1.48	0.78	0.79	1.35
2016/017	1.47	1.36	1.25	1.23	1.72
2017/018	1.25	1.26	0.36	0.71	1.35
2018/019	2.04	1.17	0.77	0.88	2.05
2019/020	1.41	1.47	0.98	0.72	3.24
2020/021	1.41	1.43	1.67	2.36	1.72
2021/022	0.28	1.28	2.67	1.40	2.39
2022/023	0.97	1.36	2.23	2.37	2.01
Average	1.22	1.34	1.66	1.411	1.905

Source: Annual Reports of Sample Banks

Loan and Advance to Total Deposit Ratio

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	76.984	49.113	51.205	70.859	80.566
2014/015	73.225	55.132	49.616	86.412	75.357
2015/016	76.572	58.628	49.376	63.2	77.361
2016/017	78.01	56.867	65.539	88.356	71.82
2017/018	66.628	48.919	56.546	60.939	75.373
2018/019	73.517	56.88	54.765	74.772	79.121
2019/020	80.449	64.384	76.495	75.913	84.087
2020/021	77.851	66.449	85.915	80.898	83.318
2021/022	87.01	73.46159	90.52	82.588	86.188
2022/023	76.69	58.87	64.44	75.99	79.24
Average	76.69	58.87	64.44	75.99	79.24

Source: Annual Reports of Sample Banks

Bank Size

Fiscal Year	**EBL**	**SCBNL**	**SBI**	**SDBL**	**SANIMA**
2013/014	44	15	50	39	45
2014/015	48	15	56	49	36
2015/016	54	15	56	52	39
2016/017	53	15	56	51	41
2017/018	65	12	56	82	42
2018/019	61	12	62	74	42
2019/020	65	12	62	55	42
2020/021	82	12	72	55	47
2021/022	94	15	88	55	55
2022/023	62	13	62	56	59
Average	62.8	13.6	62	56.8	44.8

Source: Annual Reports of Sample

Return on Assets

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	2.11	2.80	1.01	2.38	0.88
2014/015	2.39	2.67	1.19	2.43	1.39
2015/016	2.25	2.51	1.5	2.8	1.46
2016/017	1.85	1.99	1.7	2.89	1.55
2017/018	1.59	1.98	2	2.06	1.78
2018/019	1.83	1.84	1.57	2.32	1.86
2019/020	1.97	2.61	1.97	2.69	1.85
2020/021	1.94	2.61	1.94	2.61	2.07
2021/022	1.42	1.71	1.17	2.06	1.41
2022/023	0.89	1.71	0.7	2.47	1.41
Average	1.84	2.27	1.51	2.49	1.71

Source: Annual Reports of Sample

Return on Equity (ROE)

Fiscal Year	EBL	SCBNL	SBI	SDBL	SANIMA
2013/014	29.92	28.36	15.02	15.20	5.72
2014/015	32.92	26.38	20.31	19.30	12.58
2015/016	30.14	26.27	22.85	17.20	15.09
2016/017	25.50	21.69	21.551	16.20	18.19
2017/018	22.46	17.18	22.16	17.20	22.69
2018/019	19.50	11.98	14.85	30.20	14.39
2019/020	17.60	18.66	15.81	27.45	18.67
2020/021	18.09	19.49	16.2	21.10	23.2
2021/022	13.88	15.15	10.44	22.10	16.09
2022/023	8.556	9.44	6.26	23.10	18.54
Average	21.85	1.46	16.54	20.90	16.51

Source: Annual Reports of Sample

PORTFOLIO MANAGEMENT OF COMMERCIAL BANK IN NEPAL

By: Sanima Shrestha

As of: Jun 9, 2024 11:25:33 AM
11,825 words - 61 matches - 11 sources

Similarity Index

12%

Mode: Summary Report

sources:

315 words / 2% - from 27-Feb-2024 12:00AM
elibrary.tucl.edu.np

208 words / 2% - Internet from 05-Feb-2023 12:00AM
elibrary.tucl.edu.np

120 words / 1% - from 18-Aug-2023 12:00AM
elibrary.tucl.edu.np

101 words / 1% - from 30-Apr-2024 12:00AM
elibrary.tucl.edu.np

83 words / 1% - Internet from 13-Dec-2022 12:00AM
elibrary.tucl.edu.np

117 words / 1% - from 03-May-2023 12:00AM
www.researchgate.net

107 words / 1% - Internet from 18-Feb-2023 12:00AM
www.researchgate.net

166 words / 1% - from 16-May-2024 12:00AM
papers.ssrn.com

93 words / 1% - from 07-Nov-2023 12:00AM
www.coursehero.com

74 words / 1% - Internet from 10-Dec-2020 12:00AM
en.wikipedia.org

70 words / 1% - from 19-Aug-2023 12:00AM
ro.ecu.edu.au

paper text: